

MINICAM

The MINIATURE CAMERA *Monthly*

September

Vol. 1 No. 1

25c



Your next issue
The West Side
C 15

"Take an
assignment!"

PRIZE CONTEST

Page 34

COLOR *goes* CANDID

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Candidly Speaking

THE first issue of any new magazine is best announced with rolls of thunder and clashing of cymbals. But MINICAM prefers to do it more quietly, with a modest word of greeting and a brief statement of intent. MINICAM wants to be your magazine, the publication of every person who thinks a camera is more than something you hang around your neck, or tuck into your pocket, or stow in a corner of your valise. There was a time, not so long ago, when every would-be photographer had to have a touch of 'pack-mule in his makeup.

MINICAM heralds the new day of precision small cameras, of a modern outlook, of photography for fun and profit, of new ideas and new techniques. MINICAM offers you greetings and repeats that it hopes to be your magazine. It wants your help and your ideas. It may be a bit cocky, as all youngsters are. Help it grow.

E. Leitz, Inc., 730 Fifth Avenue, New York, announces that it is now considering prints for its fourth annual Leica exhibit. The only restriction, other than size, is that all pictures submitted be made with the Leica camera. Action shots and sequence series, however, are greatly desired. Complete details are available by writing to the manufacturer. Incidentally, the same firm states that its camera accessories and binoculars are now available on a new time payment plan that also includes insurance against a variety of risks. Any Leica dealer will be glad to give you full details.

The synchronized flash is one of the most important advances in news and amateur photography. Until recently, however, technical difficulties made it almost impossible to do successful flash work with cameras equipped with focal plane shutters. The recent introductions of the Wabash lamp solves this problem. Already extensively used it promises to become, in short order the foremost lamp for flashes, overcoming, as it does, inherent faults in the foil type lamps. Details about the Wabash Superflash may be obtained by writing the Wabash Photo Lamp Corp., 335 Carroll St., Brooklyn, N. Y.

Fuzzy results don't always mean a faulty lens. The slightest jar or movement of the camera, especially at slow shutter speeds, is going to show up as wobble in your print. Learn to hold your camera firmly, yet com-



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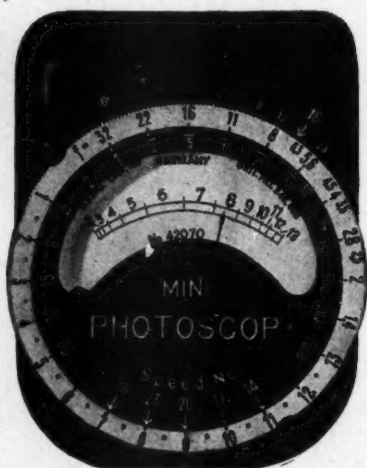
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- 4.—**OPERATION.** One hand to aim and to set, left or right-handed.
- 5.—**PROTECTION.** No opening or protruding gadget to permit dust to enter meter or clog movement.
- 6.—**ANGLE.** Absolute exclusion of top-light influence and restriction of the reading angle to less than the ordinary camera lens field.
- 7.—**MARKINGS.** Indelible, easily read large and clear

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- 10.—**CASE.** A simple, ever-ready case protecting the meter from foreground reflections.

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is the lowest on record for
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fortably against your nose or forehead. Don't jerk or stab your shutter release. Practice the marksman's "trigger squeeze", a slow and deliberate motion that does not transmit motion to the camera. To play safe, don't use speeds slower than 1/25th unless the camera is mounted on a tripod or similar firm support. A tripod, by the way, is a "must" if you want pictures in poor or fading light.

If you want to know how a scene will look in black and white you should have a Monotone filter. Professional movie men use monotone filters so much that they wear them on silk cords about their necks. Amateurs seeking to improve their work could well investigate the possibility of these viewing filters. They are made by DuPont Film Mfg. Corp., Eastman Kodak, Ilford and George H. Scheible and are available, at reasonable prices, from most dealers.

Don't overlook the possibilities of a telephoto lens for candid shots outdoors. Often it is the means of obtaining an unusual picture, across the street or at a distance. Working with a tele photo lens is easy for it enables the photographer to be a considerable distance from his subject.

Keep your camera in a case except when in actual use. A camera is a fine and frequently an expensive piece of precision mechanism. Treat it as such and you will be spared many a trip to the repair shop. Cases come in all styles, of which the most popular is the "Eveready", so called because the camera can be used without ever taking it from its case.

If you find that you are running short of ideas, you should have a picture scrap book. Into this scrap book should go pictures cut from newspapers, magazines and ads, everything and anything that suggests a better picture to you. An idea book does not mean copying by any means. Rather it is a source of inspiration for pictures that will frequently be decided improvements on the source of the idea.

Now is a good time to go over your summer negatives and begin the task of getting them classified and printed up. If you are one of these amateurs who have despaired of evolving some adequate system of filing and classification you will welcome the October issue of MINICAM in which a simple and effective system of negative and contact print filing is fully explained and illustrated. In the meantime, start weeding out the "misses" and get your "wins" in shape for classification.

MINICAM.



GENIUS

—The infinite capacity for taking pains was never more manifest than in the work of

Oskar Barnack, inventor of the Leica.

So carefully did he work, so intelligently did he plan, so great was his craftsmanship that his original camera—the first Leica—embodied all the fundamental principles that have revolutionized modern photography. The original Leica is still, even by today's standards, a great camera.

No Leica has ever grown obsolete; no imitator, of the dozens that have followed, has ever quite equalled Leica's precision, compactness, accuracy and versatility—its all-around photographic efficiency.

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Zeiss Ikon Cameras



C O N T E N T S

Vol. 1

SEPTEMBER, 1937

No. 1

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Serenaby Thomas Petroff

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MINICAM—THE MINIATURE CAMERA MONTHLY

Minicam GOES

A Composite of New York City

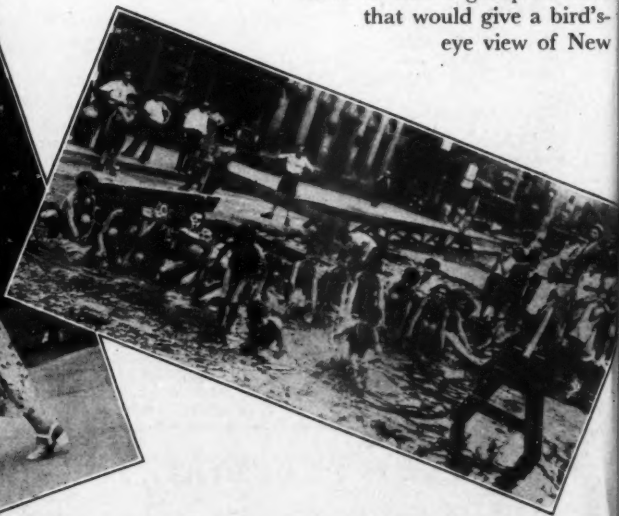
DO you want to do something new and exciting with your minicam? Then try your hand at a composite, a kaleidoscopic picture that shows at a single glance the multiple phases of some activity. Simpler to prepare than a montage, and often more effective, the composite is best executed with a minicam whose lightness and ease of operation helps to get the informal shots you will need. In the composite on these and the two following pages, Bob Leavitt, who has covered assignments for *Collier's*, *Liberty* and *The American Weekly*, shows how easily you can achieve original effects and make pictures that will be different from anything you have ever before tried.

This is how it was done: Bob decided to take a group of shots that would give a bird's-eye view of New

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To TOWN

By Bob Leavitt

York City. He tackled the job in characteristic orderly fashion. The first thing he did was to make himself an assignment list. Had he wandered about just looking for pictures to come his way, the result would probably have been haphazard and disorganized.

Instead, he drew up a list of subjects he was definitely going after. Several shots of skyscrapers, people going home in the subway, a Fifth Avenue bus, kids bathing in a fountain, the Elevated, the Zoo, the pushcart market, etc. Each picture, or group, was intended to show one facet of the big city.

When completed, his list called for about thirty items. Alongside each he made notes on where to go and the best time. In other words, he planned a schedule and a route, leaving himself

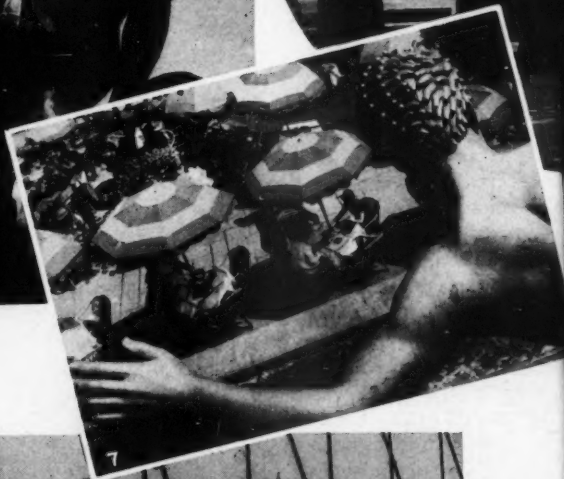
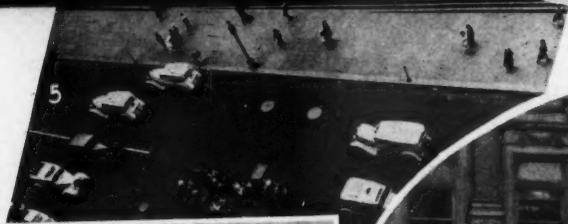
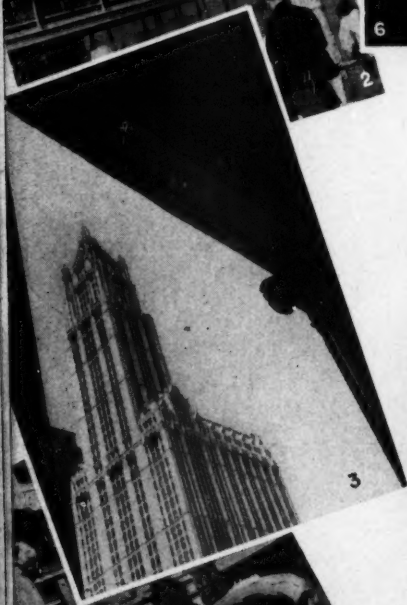




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16. City
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1. Sea Horses at the Aquarium
2. See New York's Harbor!
3. An unusual skyscraper angle
4. Atop a Fifth Avenue bus
5. Fifth Avenue and 42nd Street
6. Five-cent shine
7. Rockefeller Center plaza
8. New York's famous skyline
9. Pushcart market
10. Outdoor library
11. Six for a quarter
12. Tintype
13. Latest news from the front
14. Washington Bridge
15. Rapid Transit
16. City Hall fountain
17. View from the El
18. Central Park lake



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plenty of leeway in case some of the shots didn't pan out. The entire job was mapped. He could concentrate on the task ahead.

With good light available he managed to complete his shooting in two days. It might have taken three or even four if the breaks had gone against him. With a carefully laid out plan and the good luck of fair weather he finished in two. Next came developing and printing.

Each picture was enlarged to five by seven inches. Of half a dozen or so exceptionally good ones he made duplicate enlargements to a slightly larger size. There remained now the arrangement and mounting of the sequence. This is how he proceeded:

On thin white paper he made a rough tracing of each picture selected to go into the composite. This finished, he was able to cut up the tracings, move them about and shift his design without injuring the actual prints. The tracings were not detailed because he could always refer back to the pictures.

The best layout determined upon, the next step was to cut up the prints and mount them in the overlapping fashion you see here. Unimportant foregrounds were removed or covered. He wanted to suggest a complete picture without actually showing all of it and to have one shot blend into another. Finally, with the aid of a ruler and white ink he drew the lines that separate the various shots. This was not essential. Many workers prefer to have a greater degree of blend and omit the white lines altogether.

The actual mounting was done on a piece of light cardboard, twenty-two by twenty-eight inches, available at any stationer's or art supply store for a few cents. The mounted composite, in this or even a smaller size, framed and hung, makes an unusual and effective picture. Since Bob's composite was intended for reproduction in a magazine, his part of the job was now finished.

If, however, you want to reduce the size and get the entire composition on a single print it is a simple matter to make a copy negative with your minicam. Simply tack the mounted composite on a wall, illuminate it evenly with two or three Photofloods in reflectors and shoot it on an orthochromatic film. Thereafter you can make as many

copy prints as you want and to any desired size.

YOUR own city or town offers inexhaustible opportunities for similar composites. Not until you have tried it for yourself will you realize how many different phases there are to the life of even a small community. You are by no means limited to depicting your town. Hundreds of subjects will lend themselves to this treatment — a day at the beach, types of buildings, sports of all sorts. The list could be extended indefinitely.

Best of all, composites seldom require expensive or elaborate equipment. Because most of the pictures will be taken outdoors and in plenty of light, a slow lens will prove no handicap. Two factors only are important for a successful composite. The first is a carefully thought out plan; the second, willingness to do some experimenting to arrive at the best layout. And here's a tip from Bob Leavitt, who should know. Your local editor is always looking for pictures that are different. A well executed composite answers that requirement. Try him.

Gauging the Exposure

What to do when you are caught on an assignment and have forgotten your meter? What are the chances of coming home with good negatives? Excellent, if you follow a simple rule and are not afraid to shoot a few extra negatives. Because of the latitude of modern film emulsions, three exposures around a fair "guess" are bound to yield at least one printable negative.

On a bright, sunny day, for example, take a chance on 1/50th of a second at f 11. Then take a second at 1/50th at f 8, and a third at f 5.6 using the same shutter speed. Or, you can alter this by keeping the lens aperture constant and using 1/25th, 1/50th and 1/100th of a second, in turn. These are mythical figures for a mythical condition but they serve to indicate the general procedure.

When you are guessing, err on the side of over rather than under-exposure. Reducing the problem to a rule, make your first exposure at what you feel is probably right, the second at half the speed of the first, and the 3rd at twice the speed of the 1st. If your judgment has been ever approximately fair you are bound to have at least one usable negative.

SUBTRACTIVE LIGHTING

A New Approach To Lighting and Posing

By Kenneth Houston

PICTORIAL EXECUTION By Wynn Richards

1. LIGHT RECONSIDERED:

Too much attention has been given to the HOW and not enough to the WHY of photographic art, claim the collaborators in this first article of a series designed as a re-evaluation of the problems of posing and lighting the human figure. They propose a new mental attitude of photography in an article that will prove both stimulating and controversial.

I.

THIS is the first article in a series which, when completed, will endeavor to be a complete treatment of the problems of posing and lighting the human figure, with particular emphasis on the nude.

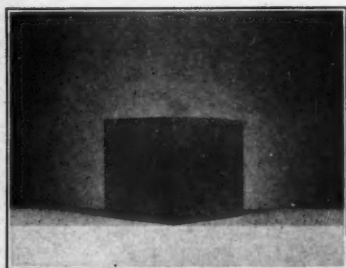
Why the nude? The nude is at the foundation of all art. So long as we are dealing with a representational art, the elemental form is the human body. We clothe and drape it; from it we build our complex patterns. We borrow its lines and curves for decorative designs. Indeed, since the dawn of art the unclothed human body has been used to portray visually many abstractions of emotion because its simplicity speaks a universal language.

This series concerns itself with the "why" and "how" of photography with the emphasis strongly on the "why". And for this reason: Photography, of late, has reached a state of quiescence, a period of static repetition such as has at various times befallen painting, music, literature. Our extraordinary

preoccupation with the fascinating mechanical aspects of the task has reached a stage where we have quite forgotten that our end product is a picture, rather than a super-super developer or a spotless spotlight.

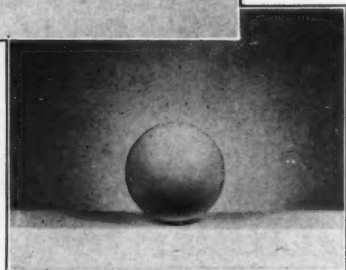
Not only amateurs but many professionals as well have developed photography along functional lines to a point beyond which progress is seemingly impossible. What is required is a new approach in order that we may cease turning out endless variations of yesterday's picture and go on to new heights.

The basic error of the current trend can be graphically illustrated by a single example. Thumb the average book on modeling. Note endless chapters of nude models shown sectionally or in full figure, in casual surroundings or, more frequently, posed in vacuum against a neutral background. Such texts reflect the general demand to know *how* and never mind the *why*. With scant introduction and less organization you are offered an undigested collection of random



*Problem 1
Flat Light*

*Fig. 1.
Flat Light
Showing
Primary
Shadows*



hints, at best a sort of artistic encyclopedia.

Let's suppose your model, camera, lights and tools (which is close enough to the truth), raw lumber and the implements for shaping it. You are given a set of precise instructions: Don't cut against the grain, drive nails at an angle. Next, the function of each tool is explained—the best way to use a plane, how to saw a straight line. Finally you are shown the picture of a magnificent house built with these very tools. Can you build a house of your own, to your own specifications?

Though a house cannot be constructed without adequate understanding of essential materials and tools, it is of equal importance to teach the potential builder something of

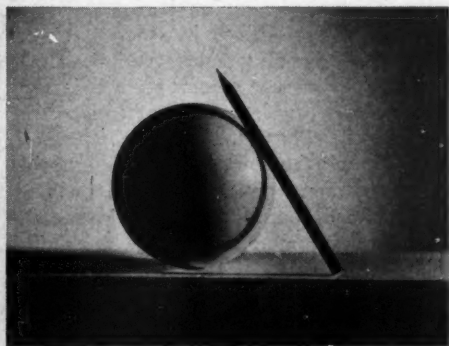
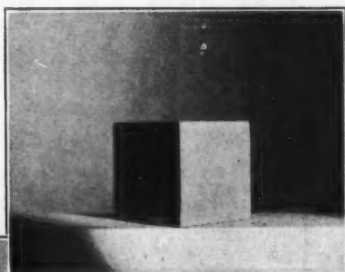


Fig. 3. Testiary Shadows

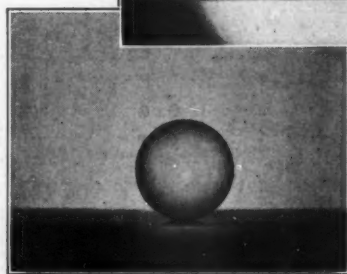
architecture and house planning. The parallel is precise. What is wanted in photography is not merely working rules but some other approach that will establish a standard of evaluation. What good is it to say that a gray background should be used, umpteen lights and the model's arm so placed that it forms a continuous, relaxed line? At best this method is a post mortem of another worker's concept. Would it not be better, instead, to pay some attention to the idea behind a picture and to offer guidance in reaching ideas of one's own?

When you pass an electric current through water in a stated way and break down the fluid into its component elements of hydrogen and oxygen, you have been delving into

*Modeling
Light or
Plane Light*



*Fig. 2.
Modeling
Light or
Plane Light
Showing
Secondary
Shadows*



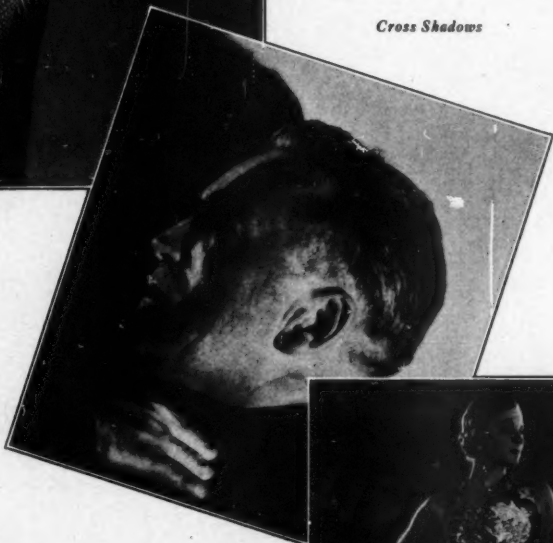
the science of chemistry. The same water coming from a mountain reservoir and climbing to the fourth story of your dwelling without the aid of pumps is acting in accordance with a law of physics which states that water seeks its own level. Both chemistry and physics are sciences that formulate the principles of their respective fields. Esthetics is the science that formulates the principles of art.

Esthetics, by establishing a set of standards, lays the foundation for the appreciation and understanding of art forms. That's all there is to a word from which most people shy off like a frightened horse from his first locomotive. Far from being itself a mystery, esthetics removes the mystery from art.

*Indicative Shadows*

lieved, superior to painting and calculated to render obsolete that ancient art. Obviously, photography did nothing of the sort, as was soon evident even to its most zealous converts. Well then, if photography could not replace painting as an art, it could certainly do a better job when it came to verisimilitude and copying. The logical function of photography, it now seemed, was to make a literal restatement of what the lens saw, whether face or potato. It could do excellently the job too petty or transient to interest the artist.

You may say all of this is true but that I am talking of a period which lies behind us.

Cross Shadows*Rhythmic Shadows*

Now that we know what is meant by esthetics we can safely use the term in our discussion without fear of causing mental atrophy. And a sane approach through esthetics has long been needed in photography. Our task shall be the esthetic, which is to say the scientific and orderly, evaluation of our subject with the dual purpose of discovering where it has gone astray and how we can carry it forward to a new level of achievement. Restated, we shall attack photography through the brain rather than the hands.

II.

Photography began as an imitative art. Here was a quick and comparatively cheap means of faithful reproduction, it was be-







Not so. The mechanical and apologetic period in photography is too recent in point of time for its influence to have faded so soon. The evidence is in any book on photography. A brief introduction and we are slap dash in light set-ups, exposure data, fine grain developers. Photography is still very much in its machine state of development.

Instead of following the approved methods let us take a bit more circuitous route. Perhaps our very absorption with the "contraption" has blinded us to some of the primary functions of our medium which, after all, is not the camera or supplementary gadgets, but light itself. Let us examine this medium and the "contraption" too, but in their proper relative importance.

An art starts on the road to originality

when it squarely faces its physical limitations and proceeds to turn them into assets. Light causes the picture to be. Let us therefore return to light and determine first whether in our concept of it does not lie our initial error.

You enter a totally dark room. You fumble about for a light switch, presently find it; there is a click and the familiar objects of your surroundings burst into view. What happened is a commonplace miracle of everyday life. If you think about it at all, your reflections are likely to concern themselves with giant dynamos and unseen wires throbbing with power. What of the more subtle miracle, that of vision, by whose magic, light, itself invisible, enables us to "see", that is, to take cognizance of and find our way about our native environment?

Consider a room twelve feet square, ceiling about eight feet high, floor, walls and ceiling painted a brilliant enamelled white. Now, in this room place a few random objects, a table, a couple of chairs, a couch, a desk. Submit the whole to a bombardment of powerful lights evenly distributed to provide uniform illumination. Finally, enter and gaze about. Can you see?

Now we are approaching our problem and the need for differentiation in definition becomes apparent. If by seeing we mean merely recognition then the answer is "yes". Once the eyes have accustomed themselves to the merciless glare, they will telegraph to the nerve centers recognition impulses so that you will not run into one of the chairs or mistake the couch for the desk. You will find, however, that you have largely lost the sense of roundness and depth. Objects appear like crude caricatures of themselves, as flat as though painted on a canvas background.

Carry the experiment a step further. Put





an ornament on the table: a vase of fairly intricate design. Between it and one of the lights place an obstruction in such a fashion that a shadow is thrown and the ornament is no longer one with the flatness of its surroundings. Immediately your eyes are drawn to it, find the shadow contours restful, the vase itself given depth, roundness, in a word, meaning.

Using the identical lights, move them about strategically in such fashion as to upset the illumination equilibrium previously existing. Shadow patterns now mark the wall and floor. Parts of the ceiling are brilliantly illuminated, others are in almost total darkness.

We can do many and extraordinary things with this room merely by shifting the existing lights. We can throw large and menacing shadows. Equally easily, we can create gay and merry designs by interlacing shadow patterns and regrouping the objects. In short, we can set up esthetic reactions of a predetermined nature, we can give commonplace objects meanings, threatening, weird or comic, as we choose, merely by the device of controlling their shadows or the shadows cast upon them.

Thus we have demonstrated that there are two distinct kinds of seeing. The first is recognition. This is a chair, this is a table; this

(Page 100, please)



Success Story:

Unique in conception, matchless in execution, T. J. Maloney's U. S. Camera has in three short years become the pictorial voice of America.

THREE years ago a young advertising man conceived an idea. Why not a pictorial annual that would do for American photographers what such volumes as "Das

Deutsche Lichtbild" and "Photographie" had done for German and French? But in American fashion . . . big and robust . . . flashing with color . . . representing not only the art groups but the healthy commercial and record workers as well . . . and at a price within the average pocket-book. All this without sacrificing quality. It was a tall order but it was carried out on schedule. American paper and ink makers, printers, met and answered the challenge of European superiority in pictorial reproductive processes. Beat them at their own game, in fact, for the first issue was able to contain eleven full color plates in a



The Leap

by Remie Lohse

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U. S. CAMERA

Is America's Pictorial Annual

book of two hundred large pages. And still sell for under three dollars.

America's leading picture makers, amateur and professional, rallied to the cause, gave of their work and time freely. Contents and judging committee read like a Who's Who of photographic fame. U. S. Camera was ready to be launched. And now the American public, that big question mark, how would it respond?

M.F. Agha, in his preface, said, "You were interested enough in photography to buy this book . . ." (Perhaps more a hope than a belief!) " . . . It is only fair to let you form your own opinion about the pictures in it, and to decide whether it is the influence of the American soil that makes them so powerful, simple and exciting."

He was a true prophet. Buy it they did, fifteen thousand of

them. No more, because the edition was exhausted within a month of release. Twenty-five thousand bought next year's, 1936, volume, a bigger book with characteristically more pictures and more color. A surer, more aggressive, less apologetic U. S. Camera, well on its way to becoming an American institution. And again the edition was exhausted

Vacation
by Luis Lemus





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"SEA SUDS"

by Toni Frissell

within weeks of its release date. Now U. S. Camera is about to appear for 1937. Thirty-five thousand this year.

A salon showing...a dainty phrase to mean exhibition of originals...starts at New York and travels the country. It's a vigorous and rowdy salon. You shove and elbow your way. None of the muted art gallery whisper here. These pictures are to be enjoyed and shouted

over. And the biggest push is around the minicam shots.

Minicam reproduces on these pages a few of the miniature camera shots from U. S. Camera about to be published. They are powerful pictures, as is the book in which they will appear. As is also T. J. Maloney from whom stems the vitality that first created U. S. Camera and now keeps it moving.

Opposite: *Spider Webs of Steel* by Orville Logan Snider.

BUILD IT *yourself*

COMPLETE PHOTO FINISHING LABORATORY IN A CABINET

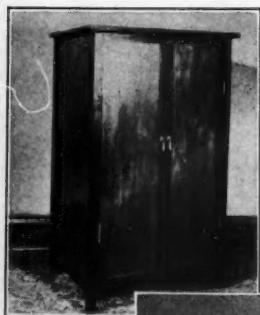


Fig. 1

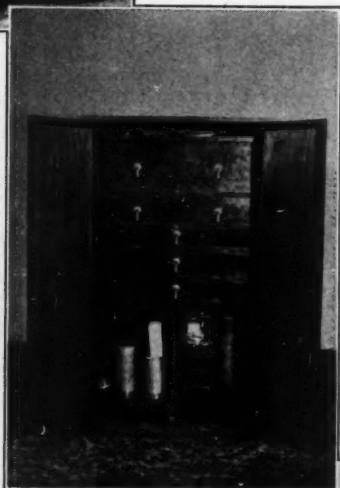


Fig. 2

WHERE space is at a premium, as it is in city apartments, it is possible to include a complete photo finishing laboratory in a cabinet as small as 23"x31"x48", and still have room for all chemicals and apparatus. The cabinet is shown closed

in Figure 1 and opened in Figure 2.

Since photo finishing is carried on in distinct operations, interchangeable tops are provided which hold only that equipment needed for each operation, the remainder being stored within the cabinet. The devel-

oping and fixing trays are set in a drawer which slides out of the left side of the cabinet and is equipped with folding legs.

Auxiliary top No. 1 is used for film developing. It can be adapted either for tank or tray development, and has a covered well in the upper right hand corner in which may be set a one gallon crock of any developer. The fixing tray is placed in the drawer referred to above.

The cabinet set for printing, as shown in Fig. 3, has the printing machine in the upper left hand corner. The lid is removable, so that the light box can be used with the glass of top No. 1 as a retouching and embossing table. The upper right hand drawer of the cabinet is a light-proof box which has com-

partments for various sizes and grades of paper, and is set on top when in use. The trays are in the drawer.

For enlarging, the top is arranged as (Page 96, please)

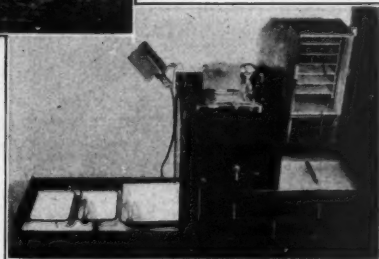
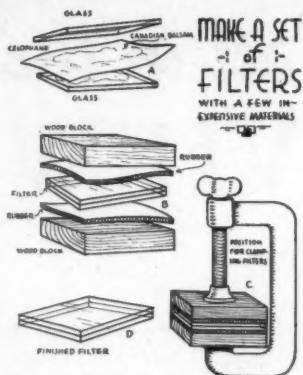


Fig. 3



Fig. 4

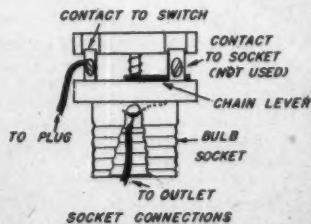


FOOT SWITCH

A CONVENIENT dark room foot switch can be made from an ordinary pull-chain socket. This is done by connecting one wire to the brass contact screw and soldering another wire to the center contact of the socket so that the wires



may be electrically connected or disconnected by pulling the chain. The socket can be fastened in a box by a strip of metal as shown in the photograph, and the chain nailed to a hinged treadle. One wire is connected to one side of a plug, and the other wire to one side of a convenience outlet which has been attached to the outside of the switch box. The other side of the plug is connected directly to the other side of the outlet, so that any electrical device can be plugged into the switch with a minimum of effort.



IMPORTANT accessories in the amateur's kit are filters; a couple of yellows of different densities, a red, a green, and a blue for portraits with Photoflood lights.

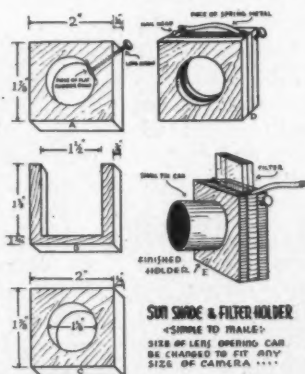
A square of cellophane of the desired size and color is cemented between two squares of glass by means of Canadian Balsam as shown. To insure proper contact and even pressure the glass and cellophane unit is clamped between two wood blocks with a rubber sheet cut from an old inner tube between the glass and wood surface on each side. This is then left in a dry room for at least 24 hours. The filter factor is then determined by a few experimental exposures.

A **HOLDER** to fit home-made filters and at the same time serve as a sunshade can be made by cutting three pieces of hardwood to the sizes shown, gluing them together, and clamping until dry. The hole can be cut either with a jig saw or an expanding bit.

The shade is made from an adhesive tape box, an old film pack holder, or even the cardboard cylinder on a flashlight battery.

The screw which secures the holder on the lens mount is forced into a hole slightly smaller than its diameter, in order to cut threads in the wood. The lens mount is protected by a piece of rubber as shown. The spring holding the filter in place can be replaced by a wide rubber band.

The dimensions given are for a Rolleiflex Camera, and must be changed to suit the lens mount on which the holder is to be used.



LAMP STAND

IF you've wished for some sort of support to hold clamp lights in unusual positions you will welcome this simple and efficient design for a portable lamp stand. It will hold two or more clamp lights at a maximum height of 56 3/8", and yet can be folded to a 33 1/2" length for transportation. Construction, as shown in the



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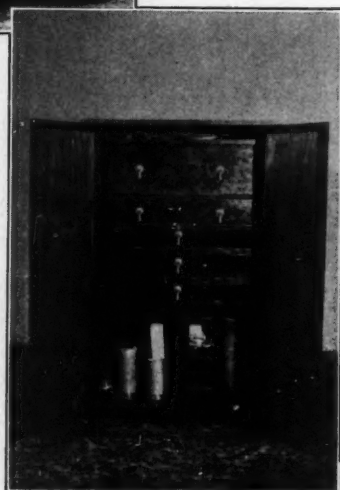


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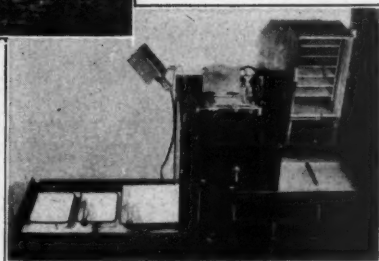


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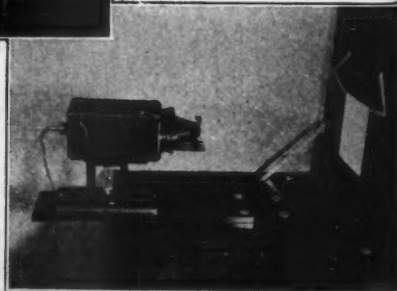
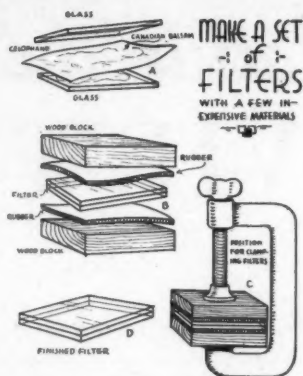


Fig. 4

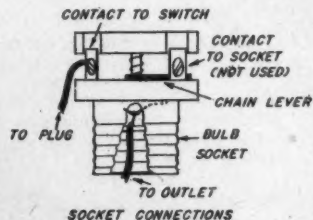


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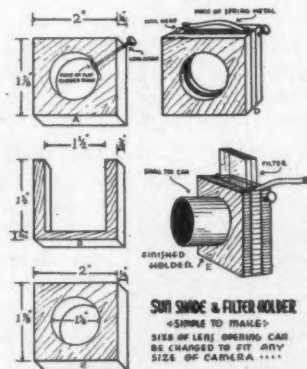


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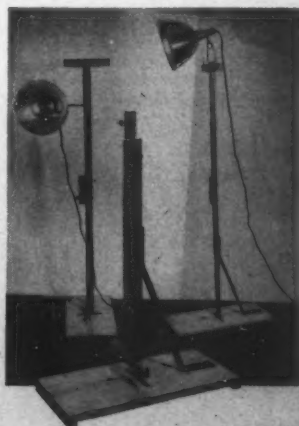


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It's all in the POINT OF VIEW

By Jacob Deschin

YOU can make a picture or lose it by the way you point the lens. Now, that may seem obvious enough, but if so why is the same subject matter photographed well by one man and badly by another? Why does the one cause you to admire his work and the other make you squirm with impatience? Many factors enter into the success of one picture and the failure of another, but in the main it will be found that what really turned the trick was the selection of the most effective viewpoint.

You may shoot your subject from a number of different viewpoints and each one will tell its own story about the same subject. You may shoot up at the subject or down on it, obliquely or head-on, close-up or from an appropriate distance. You are the one who is making the picture—and who will get the blame or the praise for it—so it's up to you to make the choice.

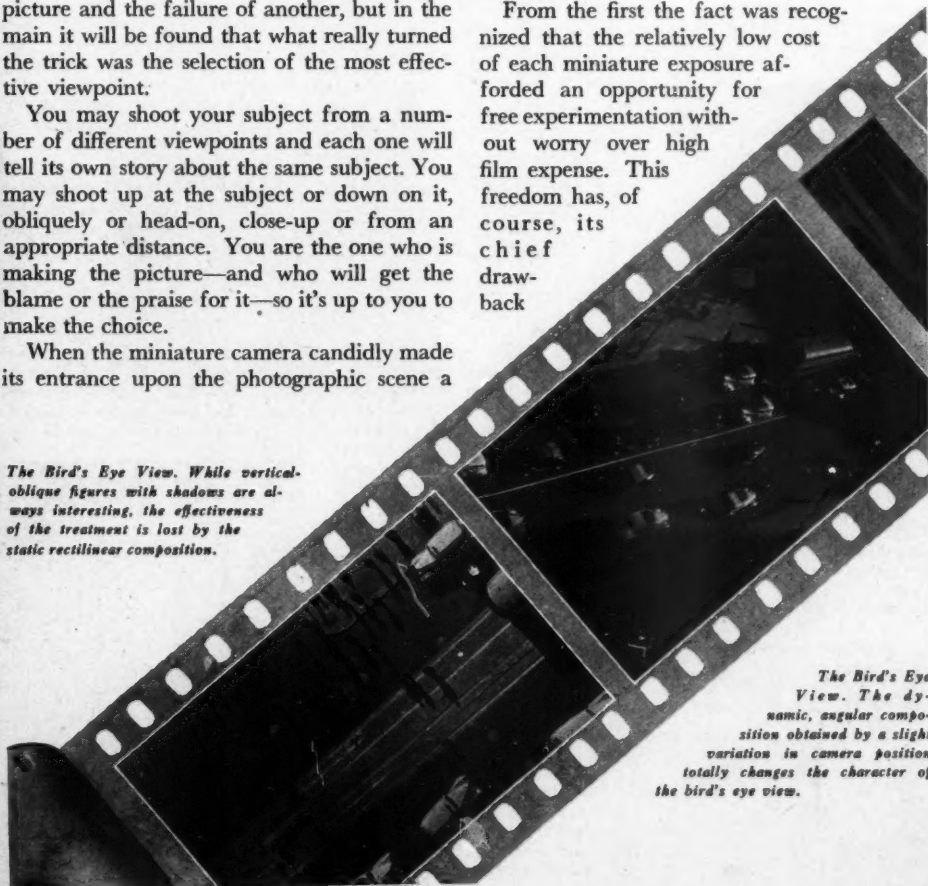
When the miniature camera candidly made its entrance upon the photographic scene a

relatively short while ago it effected a rakish gait, that is, it looked at things in unconventional ways. And one of the ways it looked was up—at an angle. That took some courage because up means distortion, convergence of lines toward the top—a bold, impertinent thing to do. But the minicam is nothing if not brazen.

From the first the fact was recognized that the relatively low cost of each miniature exposure afforded an opportunity for free experimentation without worry over high film expense. This freedom has, of course, its chief drawback

The Bird's Eye View. While vertical-oblique figures with shadows are always interesting, the effectiveness of the treatment is lost by the static rectilinear composition.

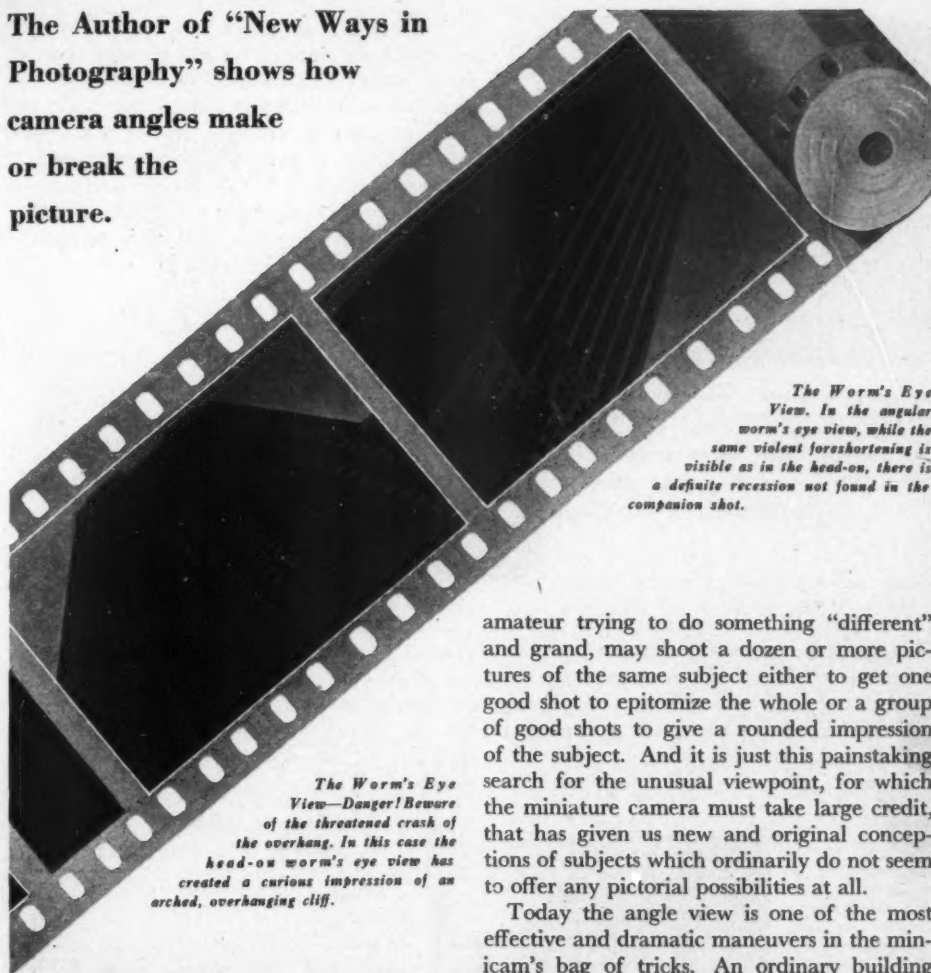
The Bird's Eye View. The dynamic, angular composition obtained by a slight variation in camera position totally changes the character of the bird's eye view.



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The Author of "New Ways in Photography" shows how camera angles make or break the picture.



The Worm's Eye View—Danger! Beware of the threatened crash of the overhang. In this case the head-on worm's eye view has created a curious impression of an arched, overhanging cliff.

The Worm's Eye View. In the angular worm's eye view, while the same violent foreshortening is visible as in the head-on, there is a definite recession not found in the companion shot.

in a tendency to carelessness and hit-or-miss shooting. However, its benefits greatly outweigh this factor, the principal one being the encouragement thus offered for treading fresh fields and pastures new in the way of viewpoints. Parenthetically, it may be said that the serious amateur, whatever may be his thoughts when he is digging into his jeans to pay for a new film supply, never thinks of film expense when he is actually taking pictures. It is the picture that counts; not what the film costs.

Nevertheless, frugality may not be ignored and all amateurs appreciate the undoubted cost advantage of miniature film. Instead of making a single shot or two or three, the

amateur trying to do something "different" and grand, may shoot a dozen or more pictures of the same subject either to get one good shot to epitomize the whole or a group of good shots to give a rounded impression of the subject. And it is just this painstaking search for the unusual viewpoint, for which the miniature camera must take large credit, that has given us new and original conceptions of subjects which ordinarily do not seem to offer any pictorial possibilities at all.

Today the angle view is one of the most effective and dramatic maneuvers in the minicam's bag of tricks. An ordinary building assumes a glamor and beauty often entirely lacking in a head-on, conventional keep-the-lines-straight shot. It has grandeur and power and the freedom of space. It lives in the sky, where men's dreams lie.

The upward angle or worm's eye view, presents the paradoxical problem of throwing the subject off balance yet maintaining a sort of esthetic balance sufficiently reasonable to give satisfaction and, in the best examples, evoking an emotional response familiar to all who have thrown back their heads to take in the upper reaches of a modern skyscraper. The degree of the camera tilt and the consequent tilt of the subject is determined by the distance of the camera from the subject.

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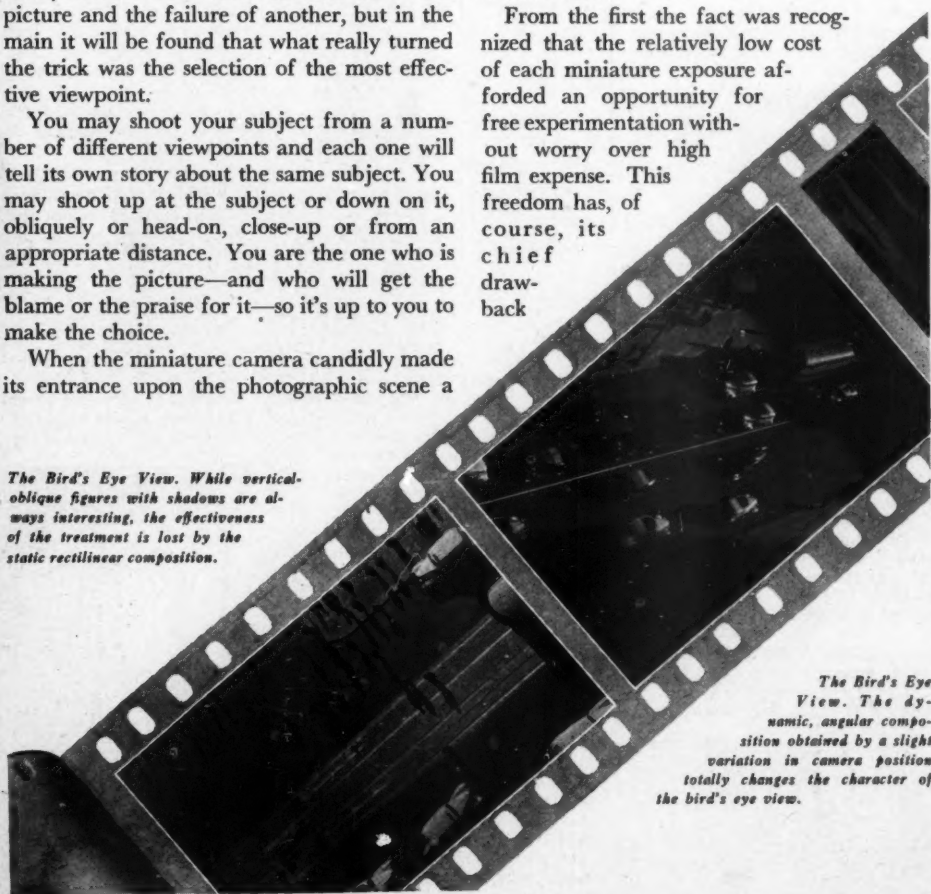
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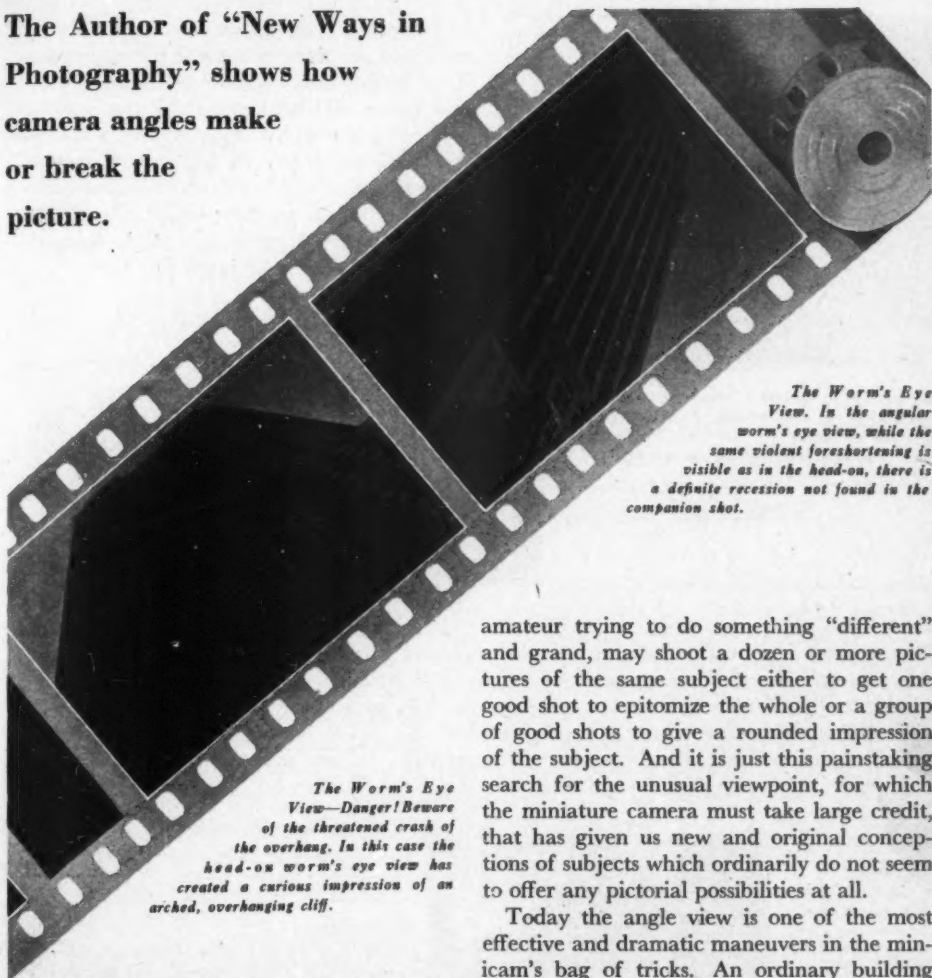
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The Oblique Viewpoint. Compare this with the other view of the same building. There is a definite suggestion of depth and solidity, much more natural than the head-on view.



The Head-on Shot. The head-on view does not give a satisfactory impression of solidity. The absence of any except the front wall emphasizes the two-dimensional plane of the picture.

Too near an approach or one too far distant will give poor, at best indifferent, results. Each subject will offer a new field for experimentation and you will have to approach your subject and recede from it, trying it from this side and that side, observing it a dozen different ways. If you have what it

In photography, particularly in miniature camera work, it is foolhardy and presumptuous to lay down rules. So and so may you do, but not so and so, is mandatory in science, but can never obtain in art. And photography is an art, contrary opinions notwithstanding. Those who oppose this view have

(Page 98, please)

The General View. Such a general view of action serves to create an atmosphere but it is weak in that the effect is confusing. The subject fairly begs for a definite center of interest to hold the eye.



The Close Up. The center of interest is provided by adopting motion picture technique. Moving to close-up position not only gives larger size but forces attention upon the important figure. Now compare this with the preceding.



takes, you will know where to stop and how much to tilt. And what it takes is simply a matter of experience and good taste.

The downward viewpoint is that of the philosopher. The upward angle represents man's humility, his nothingness in a vast infinity. But when you climb in order to shoot down, it is you who are god and the scene below nothing more than your own little world. What you select for pictorial represen-



DORIS DAY

Paradox of Photography

By Carroll Taylor

She makes matchless studies of babies but would rather be out in a fishing smack. She prefers a bunk in the fo'c'sle to the best New York has to offer.

TOO many interviews with the great or near-great of photography degenerate into a series of maxims and working rules. "I generally work at $f84$ and use a panchromatic film especially designed for me . . . I shoot at $1/237\frac{3}{4}$ seconds and only between a quarter past twelve and half past two . . ." and other inanities mumbled (when not put into their mouths) only because they simply must bring a weighty message to the amateur. Seldom has any photographer the courage

to say that he has no hard and fast rules or that he shifts his working technique to suit the exigencies of any given situation.

Doris Day is one of that rare, courageous breed. She considers questions concerning exposure data, developing formulae and the like ridiculous and having no bearing on the subject of what makes a picture good or bad. That's not an altogether safe attitude. In photography these days you get further if you claim you simply must stand on your



Tommy and Tinker



Father and Son

*Ho-Hum*

head to get that "zowie" expression or that you have a particularly potent witch's brew whereby you take a fly speck and blow it up into a cathedral mural.

Doris Day has a couple of capable laboratory assistants. So has every other successful professional photographer. The difference is that Doris Day admits it. Certainly, she makes salon prints and fusses and fiddles and pulls twenty-four prints before she has one to suit her, but that comes under the heading of fun. The other ninety-eight percent of the time she plans her picture, blocks out her lighting, sees to it that assistants are doing their proper work and, at the right moment, presses the button.

If you want to know the difference between a five dollar and a five hundred dollar photographer you have to look, not at working technique, which is fairly well standardized after you distill out the hokey, but at the personality the individual brings to his job. That personality may be surrounded by a goodly heap of bunkum and yet produce because it is basically sound, or it may be forthright and reach the top by the sheer, unadorned brilliance of its achievements.

Doris Day belongs to the latter group. She is a five hundred dollar photographer because she attacks every new assignment with the same zeal and curiosity she brought to her first. Now that's talking in generalities

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and we've already had too many of them. Let's take a specific example.

An agency came along with an "impossible" problem. It had to have for one of its bigger clients a picture of a baby scratching its bottom. When you say "baby picture" you mean Doris Day. She doesn't care for them. You could off-hand mention a couple of dozen things she would rather do than photograph a baby. Just the same she makes the best in the country as any agency will tell you at considerable length. The one reproduced here has the distinction of being the only baby picture she has made that she also happened to like.

However, we were talking of baby scratching its bottom.

"We know it can't be done, but if you'll try it, we'll give you fifty dollars for an hour's work." Thus, the agency.

Here was the chance for a bit of tall grandstanding in the approved manner. "I think it can be done without any trouble," she replied.

She was given the fifty and promised another fifty if she delivered, which in due course was precisely what happened.

How was it done? Let her tell it.

"Obviously, if I had waited for the baby to get that particular impulse I might be there yet. It's ridiculous to pretend you can do anything with infants, any more than you can with pets. Both are sweet little animals. And both will fuss and sulk and make your life thoroughly miserable if you try to force them into posing. So, of course, you have to trick them into doing what you want. This time I merely put a bit of adhesive on the



Becalmed

desired spot and naturally the baby scratched it. That's all there was to it."

It's like the magician revealing a mystifying trick. After you know the answer, you wonder why it hadn't occurred to you before.

WHAT sort of person is Doris Day? You could catalogue character traits all day long without getting more than a vague outline that could fit a hundred other people just as well. Not until she begins to talk can you get any inkling of the underlying personality that sets her apart from the ordinary run of button-pushers.

You start Doris talking by telling her about your own dog or farm. She's Minnesota bred (where a thousand acres is considered just a good start) and she looks it. Big frame, strong

jaw and a powerful arm, she could probably give you a hundred yards start and plow you right under the table. As for dogs—well, Crowell recently published "Dog Days" prepared by Miss Day in collaboration with Florence Wildeman Trullinger.

A friendly Scotty pup will prowl about your legs while you frantically wonder how much of what you are hearing you will be able to persuade anybody to believe and how on earth you are going to fit all the pieces of this multiple personality into a coherent yarn.

Doris Day is a free lance newspaper gal turned photographer because she happened to have a picture of Senator Kellogg's house the year President Coolidge decided it would be a grand place for the summer White House. Absolutely. If you've ever wondered how people make those decisions, now you know.

Doris comes of a long line of printer's-ink-smudged folk. Her father and two brothers, all three, ran small town papers in Minnesota when they weren't out digging up the good earth, as the saying goes. Anyway,

they knew people vaguely, as newspapermen do, and Doris got her picture of the Kellogg house mainly because she happened to be there. Came the day in New York when said house suddenly became News and Doris decided her shot was an easy way of making ten dollars.

"It was a terrible picture," she admitted, laughing. "I knew nothing whatever about how pictures were sold but I was willing to find out."

She got so indignant at being offered three dollars for a picture she thought worth ten, and the agency so impressed at the power of her indignation, that she got not only her price but a job selling pictures as well.

That's what I said, selling, not making pictures. Seems funny, doesn't it, sort of going at things in reverse. She was good enough to become assistant sales manager of Underwood & Underwood, though, and, in due time, to start her own business. Along the way she learned to make those pictures that start fond fathers wondering about going in for bank robbery on a really serious scale,

One Man Alone



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but you can't get her to talk about that. You have to take a fresh start.

Doris Day has a hatred of closed places that amounts to what a couple of years ago the better people were calling Claustrophobia. Doris has refined it down to a specific dislike of roofs over her head. Stationary roofs, I mean. Once she spent a week on a commercial fishing boat. The shot of it included here ranks as one of her all-time favorites, by the way. All hands (fourteen men and Doris Day) slept in one tiny fo'c'sle in bunks so narrow that you had to pull in your arms tight to keep from overflowing.

"You could tell the captain's bunk because it was inches wider," she explained. "We were out for a week and almost lost a dory with two men in it."

Although it's a far cry from the boat deck to the prairie, Doris has never lost her interest in the back country people. Some of her most powerful pictures originate in the sense of vastness and aloneness that must have been bred into her during those early years in Minnesota. This is how she puts it:

"The farmer is probably the most lonely man on earth. He has to battle every force of nature. He's misunderstood and, until recently, been neglected and ignored. Unless you've been out in the middle of a vast field with miles of flatness all about you and giant clouds bearing down from overhead you can't imagine what solitude means."

ONE *Man Alone*, reproduced here, manages in uncanny fashion to convey that sensation. By the time this appears, Miss Day will be out in the country she loves on an assignment that we have a hunch will rank with her week on the fishing boat. The J. Walter Thompson Agency has sent her out into the farm country to do a series on folk types. Incidentally, when she returns, she will prepare an illustrated article for MINICAM on the people and the ways of the back-road country as seen through the eyes of her own minicam.

"Working in the studio and outdoors calls for two different methods, almost two different people. When I'm taking studio baby pictures I generally have several assistants, including a nurse to play with the baby and keep it happy. I try to make myself as incon-

spicuous as possible because I don't want the baby to keep looking at me. My problems are first, to compose the scene and second, to figure out a way of getting the infant to do what is expected of it. Whatever the job may be it's been planned in advance. Everybody knows his duties and carries them out as quickly as possible because lights are hot and you can't hope to hold an infant's attention more than a few instants, and often not even that long.

"Out-of-doors, however, all this is changed. Most of the time I am working alone with no more equipment than I can lug. I have to find my picture and, if it is a person, convince him or her that I mean well. Light conditions are seldom the same twice and there is neither opportunity nor time for elaborate preparation. Perhaps that's why I so much prefer this sort of work."

Many photographers jealously guard the secret of their effects. Not so Doris Day. If you want to know how she did something, and she happens to remember, it's yours for the asking.

"Technique? I guess I must be old-fashioned. People look shocked when I tell them that when I want a cloud effect I slap on my K-2, if it happens to be handy. It doesn't seem to be the neat way of working, I'm afraid."

Quite probably Miss Day is correct. It isn't the neat way of working, but it certainly is an effective way—for Doris. After a while, the strangeness of the paradox that is Doris Day begins to wear off. You presently come to see that there is a subtle affinity between her incredibly delicate child and pet studies and the rollicking seascapes banged out (if a camera can bang) from the slippery deck of a rolling schooner. The affinity is the earnestness of purpose and the amazing concentration of attention she brings to any task; plus her flair for winning and holding your friendship, all in a few minutes.

Don't let her kid you. Doris Day likes her child pictures and she probably adores children. She also adores dogs and the nineteen turtles she once had (did I mention that), and people, and boats and farms, and so far on into the night. Because Doris Day is first an artist and as such, she traces, though she quite likely doesn't know it, the source of her continuous inspiration to a deep-seated and abiding love for all things which live and move.

MINICAM'S PRIZE CONTEST

"Take An Assignment"

Can you carry out an assignment? Leading magazines, newspapers and other buyers of photographs are always seeking photographers capable of taking an idea and giving it pictorial execution. If you can bring your own imagination to bear on a subject in such a way as to stamp your picture with your individual personality, *you* have the makings of a great photograph.

These are the things MINICAM wants to find out in this prize contest. First, can you take an idea and express it fully and completely within a single picture, with so much force that every person will unmistakably understand your intent? Second, can you give the idea originality of presentation?

Here is the "assignment" for which MINICAM will pay \$175.00 in prizes: Your theme is **HAPPINESS**. Your job is to convey,

within one picture, that sense of complete joy and contentment we commonly identify as "happiness". You are free to carry out the assignment in any way your own mind dictates. For example, you might show a child completely absorbed in play; a young girl awaiting the sound of her sweetheart's footsteps; an old man relaxed before an open fire. You may even make an abstraction without a human subject. There are as many possible interpretations as people who tackle the assignment.

For the best picture titled "Happiness" MINICAM will pay \$100 in cash. A second prize of \$50 and a third prize of \$25 will be awarded for the second and third best pictures submitted. In addition, fifty merit blue ribbons will be awarded to the fifty best pictures submitted.

RULES

All contestants must abide by the following simple rules.

1. All pictures must be made with miniature cameras whose film size is not over $2\frac{1}{2} \times 3\frac{1}{2}$ inches.
2. Pictures must be submitted as glossy prints on paper not smaller than 5×7 inches nor larger than 8×10 inches. It is not necessary to mount prints or to make elaborate presentations.
3. If human subjects are used, a statement of release for publication signed by the model must accompany each picture.
4. You may submit as many pictures as you wish provided each is complete in itself and is on the subject "Happiness".
5. It is not necessary for you to do your own developing and enlarging.
6. All submissions must be sent to Contest Editor, MINICAM, 381 Fourth Avenue, New York City.
7. If prints are to be returned, a return stamped envelope with sufficient postage must be included at the time of submission. MINICAM cannot assume responsibility for pictures lost.
8. The sole judges shall be the editors of MINICAM whose decision shall be accepted as final.
9. Prize winning prints shall become the exclusive property of MINICAM. Contest closes October 10th, 1937.

Rhythm And Repose

Natural color photograph by Remie Lohse

The picture on the opposite page, *Rhythm And Repose*, is taken from the book of the same title by Remie Lohse and soon to be published by the firm of Alfred A. Knopf. This natural color picture, taken with Kodachrome, is notable for its exceptional strength of composition and the superlative artistry with which Mr. Lohse conveys all the inherent beauty of the body's line and mass. Mr. Lohse is internationally famous as one of the most skilled exponents of the miniature camera which he uses in all types of work. His constant aim, as expressed by one famous critic, is to "catch life in the act". In the present picture he has succeeded to an extraordinary degree to convey the sensation of that rhythm which is the theme of his book.

(See opposite page)

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PHOTOMICROGRAPHS

By Polarized Light and Rhineberg Illumination



Granulated Sugar Crystals by Polarized Light

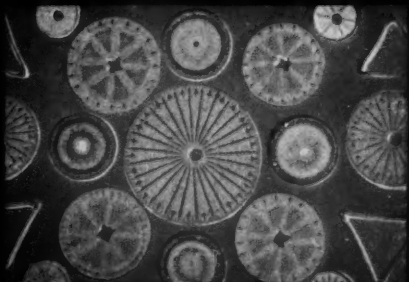
Two different color effects produced by rotating the plane of polarization



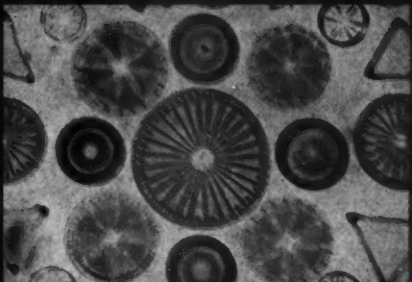
Canna Starch Grains



Myristic Acid Crystals



Diatoms as seen by Rhineberg Illumination



Natural appearance of Diatoms with ordinary lighting

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The Subvisible World Of COLOR

By Herbert C. McKay, F. R. P. S.

WE live surrounded by color, not only that which we ordinarily see, but a universe of exotic color of which we are wholly unaware. This is true in many fields of experimental nature open to the amateur, but at this time we are concerned only with color as we find it in that world to which we gain access through the medium of the microscope.

Fortunately this subvisible world is open to all of us, for microscopy and photography have many things in common, among them the fact that while few people ever reach the stage where complete mastery may be claimed, yet the practical enjoyment of either is open to everyone with a minimum of effort. Obviously the greatest satisfaction can be achieved by joining the powers of the camera and the microscope so that the beauties discovered by the aid of one may be permanently recorded by the other. The ease of modern direct color photography makes it possible for us to keep these micro records in the full splendor of their original appearance.

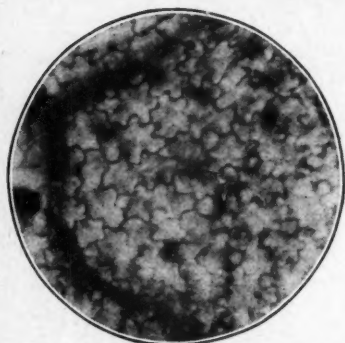
The process of using the camera to record microscopic images is known as *photomicrography* (accent on the syllable *cro*). Do not make the common error of referring to this fascinating field of photography as *microphotography*. This name is reserved for making very small photographs of large objects.

Photography through a microscope has long been a favorite with miniature camera hobbyists. Something new under the sun is photomicrography in color. Technical Editor McKay tells in this unusual article how it can be done by any amateur without special training or expensive equipment.

Photomicrography offers the experimenter a free ticket to an endless journey of adventure; a journey to strange lands inhabited by weird and monstrous creatures unequalled in the most terrible nightmare; and by both animate and inanimate forms whose sheer beauty defies any attempt at description. As one noted lecturer so aptly put it, "Of course we each of us recognize the fact that none of us can hope to exhaust the possibilities of his own door yard, not even in the span of an entire lifetime!"

During the past ten years I have obtained materials from the city parks, the Palisades and the region of the Delaware Water Gap, and have found duplications comparatively rare as compared with the discovery of (to me) unique finds of both animal and plant life. I doubt that I shall ever lose the thrill of expectation that comes with the first peep into the unknown world that is every new specimen.

There seems to be something terrifying to the beginner when photomicrography is mentioned, but despite its mouth-filling name, it



Surface of leaf. Microscope focused on cell wall divisions.

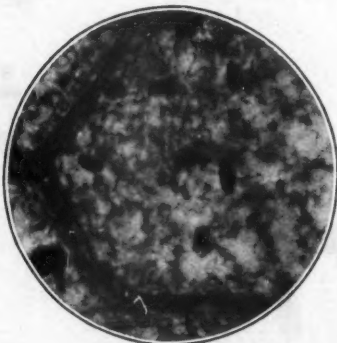
is one of the simplest forms of specialized photography. In its elementary form it consists merely of focusing the microscope, supporting the camera above it and making the exposure. Naturally there are some limitations, but if we accept the research photomicrograph as 100% perfect, the commercially acceptable one as 90% then we can grade the amateur effort made with inexpensive instruments at about 75%. The beginner can make photomicrographs which will compare favorably in quality with his straight photography, with equipment the total cost of which can be kept below thirty dollars for black and white. For an equipment expenditure of less than fifty dollars you can indulge in color, all this with the assurance that your work will be three-quarters as good as though you had thousands of dollars to spend and years of study behind you!

The quotations given above include the cost of the camera which you already possess and which you use for many other purposes. Naturally, if you own a high grade miniature camera, so much the better. The additional equipment needed is the microscope. This may be a good amateur instrument which sells in the neighborhood of twenty dollars, it may be a laboratory model worth approximately one hundred dollars, or it may be a research instrument whose value is greater than a good quality automobile. The amateur instrument will serve admirably for your early experiments.

In addition, if you wish to experiment with the wonderful color effects as shown in the accompanying illustrations, you will need a pair of the polarizing discs for the microscope. These may be obtained in various grades from about five to twenty dollars a set.

Color by Means of Polarized Light

While both camera and microscope are instruments with which we have some understanding, the use of polarized light is not so familiar. The effect may perhaps be most easily imagined if you think of a light ray as resembling a string of tinsel rope used for trimming Christmas trees. If you hold a table fork with the tines upright and pull the tinsel through one of the spaces, the rope will be flattened, and the round rope becomes a flat strip. Such a ray of light is said to be polarized. This effect is obtained by passing the ray of light through a *Nichol prism* or through a



Same as above, focused on stomata, or "breathing apertures." Slight changes in focus alter appearance.

sheet of *Polaroid*. Now imagine a second fork with the tines held horizontally. The strip first formed is vertical and cannot pass through the second fork *unless it is twisted*. If the light ray is passed through a second prism or polaroid, which has its axis crossed to the first, the ray cannot get through and so by holding one transparent substance behind another and rotating one of them, a position is found where they appear black. The light cannot pass through two perfectly transparent objects!



However, if we place something between the two polarizers (or polarizer and analyzer, as they are more often called), something which will *twist* our ray of light, we obtain an entirely new effect. When we subject the light to the strain of twisting, we find the different wave lengths (colors) affected to a different degree. Hence, with such a substance between the polarizers, the rotation of one of the ele-

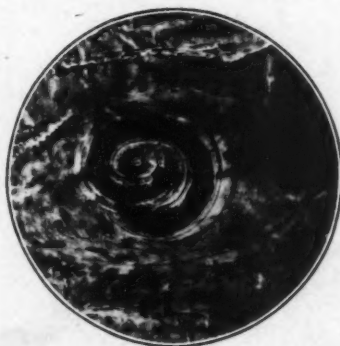
ments instead of showing a change from light to dark, shows a change of color.

Now if we place between the polarizers a crystal which is optically active, that is, one which has an effect upon the polarized ray, we find that the color depends upon the thickness of the crystal. In the case of sugar crystallized upon a slide of glass, the surface is ridged and cracked, so that the crystal reveals a gorgeous display of color.

How to Use a Microscope

THIS sounds tremendously complicated, but is really quite easy. Before you start to experiment with your equipment, place a small drop of water on a microscope slide, drop into it four or five grains of table sugar and stir with a toothpick until the grains disappear by solution. Set the slide away to dry. Upon drying the sugar will crystallize on the slide. The slide will show just a small spot of "frosted" appearance.

There are innumerable substances which give beautiful effects such as metol, hydroquinone, quinine and many others, but sugar



*Trichinella,
the parasite
worm found
in raw pork.*

is easy and always at hand. Salt will not work satisfactorily.

And now, while you are waiting for the slide to dry, set up the microscope. You will have to watch one or two little points which are easy, but which will ruin your efforts if neglected.

The first of these is to have the light evenly distributed over the field of the microscope and the second is not to use too much light. For even illumination, set the light source directly in front of the microscope and carefully adjust the mirror until, when looking down into the field, you see a disc of light which is of the same brightness all over. Next

set a cardboard shield in front of the light and cut a hole in the shield about as large as a five cent piece. Look into the microscope. If you see a bright spot in the center and a surrounding ring of shadow, enlarge the hole. Keep on cutting the hole larger until you can see just a narrow ring of shadow around the edge of the light disc in the instrument. These two minor precautions will assure excellent results.

The next step is to set up the microscope and examine a specimen. With the instrument you will no doubt receive some slides with permanent objects mounted under glass. Let us select a fly's wing. Place this directly under the lens at the lower end of the microscope tube (*the objective*), lower the tube until the lens almost touches the glass. Now look into the tube and slowly raise it until the image appears sharp. Focus as precisely as you can, then look at some distant object for a few minutes. Again look into the microscope and *without straining to see sharply* focus until you see the object clearly and effortlessly.

The reason for this procedure is that when the microscope is focused properly, it is *set for infinity*, that is, the eyes, looking into it, are as relaxed as they would be when gazing at a distant object. Not only is this important for your physical comfort in using the instrument, but it is essential for photomicrography. The reason is simple. With the microscope properly focused for infinity, it is only necessary to set the camera for infinity and support it over the eye lens of the microscope and a sharp image will be formed upon the film!

If your first experiment results in a fuzzy

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*Cross section
of tooth from
a prehistoric
(fossil) fish.*



The FOURTH DIMENSION *In Photography*

By Frederick C. Daniels

FOR generations the fourth dimension was a symbol of the unattainable. Then Einstein made it real and comprehensible. He proved to us dramatically that we live surrounded by Time, that without Time existence would be a weird nightmare. However, the knowledge has not as yet deeply influenced our everyday lives. Though Time enters into every breath we draw and every step we take we accept it as the measuring stick for human activity—and little else.

In pictorial representation, Time, as something more than a progression of seconds, as a real dimension, is just gaining the recognition its deep significance deserves. It is well known that three dimensional photographs are by far the most realistic of all pictorial forms; and it will soon be recognized that the inclusion of the fourth dimension lends to photography a mental clarity not inferior

to the physical clarity given by the third.

What holds back our advancement? More than anything else our belief that modern lens-art is an honest means of reproducing a scene or person. But try giving your favorite picture to a South Sea Islander and ask him what he gets out of it. By actual test he won't know top from bottom, won't recognize a tree as a tree or a face as a face. Why? Because though we practically never stop to think about it, conventional photography is in reality little more than a symbolic shorthand—a kind of picture writing understandable only to those who have learned to read photographs. There are many reasons why this is so: reproduction in one flat plane, color translated into tones of black, the unaccustomed perspective of lenses that do not see things in the same way as the human eye. But, more important than any of



Archery Sequence by Walter Engel

Time, The Fourth Dimension, is the most modern development in miniature photography. How Time can be incorporated into your pictures makes a brilliant and "different" article.

these is the startling truth that *the modern snapshot is a reproduction of a scene that never existed and could never possibly have existed.*

To understand this fully try to imagine that you have been suddenly endowed with the power of the wizards of fairy-tale days. Pretend that by the wave of a wand you could instantly suspend animation in everyone around you. Think of the result in a crowded street—some would be off balance, others in grotesque postures impossible to maintain normally. People would be caught in the midst of a yawn, some squinting against a wave of tobacco smoke, still others slumped just as a turned ankle gaye way. In short, you would create an area of inhuman grotesquerie, bearing no more resemblance to the actual animated scene than a page of Egyptian hieroglyphics to a Rembrandt or Raphael.

You have already guessed the goal toward which we are aiming.

A picture representing the suspended animation of a brief fraction of a second can never be a credible approximation of the original unless the subject has been care-

fully posed for the purpose — and then farewell to all naturalness or spontaneity.

No single photograph can ever be a truthful representation of a living subject!

Borrowing Motion Picture Technique

In the motion picture we not only have the fourth dimension, but find it paramount. The whole structure of the movie is built about the time element. In its very exaggeration we have an excellent model for study as we immediately see by examining the elements that form its sum total.

First the characters are introduced to us. Some explanation, either verbal or pictorial, concerning time and place follows. In other words, the scene is set. Next the plot is introduced. This means that the complications, later to be solved, are placed before us. Very shortly the conflict begins, for therein lies the essence of every motion picture as of every stage drama and literary work. Now the action is carefully developed to carry the conflict along, with cleverly inserted bits of suspense and a changing balance in the fortunes of our respective characters.

Eventually the grand climax is reached. This is the moment chosen by most still photographers for their single shot. But while a very modest movie climax will suffice nicely, even the smashing climax of real drama leaves us cold when we see it alone. The reason is that the motion picture

leads us into the story and carries us along. We expect something. When it happens we may not always be surprised, or particularly gratified, but we will at least be satisfied. Weak or strong, we recognize the climax for what it is because we have followed the entire story.

We live in Time. Without it the world about us becomes unreal as though we were robbed of one of the familiar three dimensions of space.

Time is more essential in faithful reproduction than any other photographic factor!

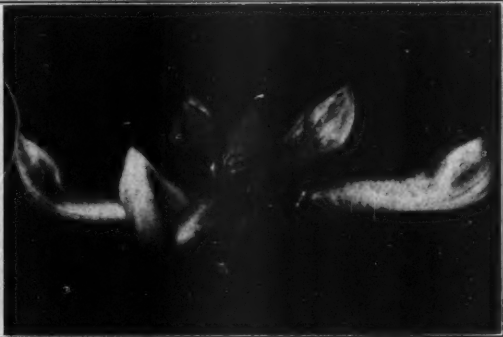
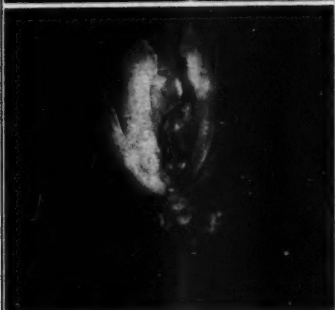
HOW can Time be incorporated into a still picture? The answer is simple. Since Time obviously cannot be imprisoned in a single negative, an abbreviated motion picture technique must be borrowed and a series of negatives made. We stress the negative, for by careful workmanship and montage, all may be incorporated in a single print.

In considering the sequence shooting which is so necessary in four dimensional photography, one always hears the question,

"How rapidly should I shoot?"

The question is identical with one so often raised by cine amateurs concerning the length of a scene. In movies, the length of the scene is gauged by the same circumstances which dictate the interval between shots in the sequence. In each case the nature of the subject is the sole determining factor. Needed is a departure from your accustomed mental outlook, difficult to accomplish at first, but essential for success, namely, avoidance of the desire automatically to reproduce whatever passes before your lens. Learn to think and select, to develop a

Twenty-four hours in the life of a bud. These pictures were taken at intervals of several hours and show the progressive opening of the blossom. On the opposite page is another type of sequence shot, taken at intervals of approximately a quarter of a second.



plot. You must appreciate the necessity for proper introduction and the even greater importance of the finale, the explanation of what happened after the climactic moment. Cultivate the ability to recognize the drama in the passing show of life and you will find it everywhere.

When you begin to visualize pictures as a medium for interpreting *life* instead of instantaneous attitude, when you reproduce in picture form a complete incident rather than a congealed pose, you will begin to understand why so many of your earlier pictures were disappointing. This knowledge will come to you together with the pleasure of making a picture, composed of several individual photographs it is true, but a picture which for once requires no explanation from you when it is shown to friends. It can stand without the verbal scene-setting so essential under ordinary circumstances.

A Story in Pictures

Perhaps this can be brought home more forcefully by reminding you that when you return from your vacation and show your snapshots to friends you explain each one *in terms of several other related pictures* which you did not take, but which should really be present to make your snapshot a complete picture.

The new technique of four dimensional photography consists of actually *making* the extra pictures which hitherto you only *described* as an accompaniment to the fragmentary picture you caught.

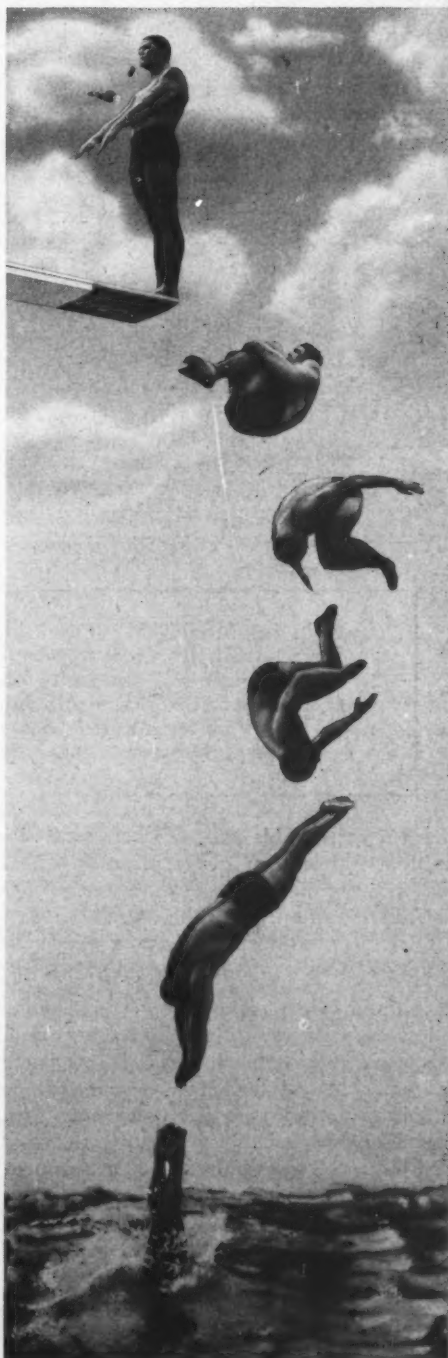
The camera picture, model 1938, is in reality a tabloid motion picture.

"How rapidly should I shoot?"

We have indicated why this question cannot be given an arbitrary answer. We present two pictures here, one of an opening bud in which the intervals were approximately twenty-four hours, and another, a montage of a diver in which the intervals were about a quarter second. In still another, some intervals were a fraction of a second apart while others were two or three seconds depending upon the rapidity of sequence of the original action.

As you have surmised, the trick is to recognize the significant moments of an incident and make the exposures accordingly. Your

(Page 96, Please)



The Candid CAMERAMAN

CANDID photography! Born as a stunt to show the versatility of the miniature camera . . . seized as a hobby by a legion of amateur lens-hounds . . . booted into a profession by far-sighted news sheets . . . an entire nation made candid camera conscious . . . Little did Doc Salamon dream his early efforts with small cameras would lead to this.

The strip-tease girls imported back into Texas, the billionaire getting into his car, the

club "Battle of the Century" and twenty million readers will chuckle their heads off over the breakfast table next morning. We're that kind of people and we might as well admit it. We love our idols but we love the banana peel too.

That's one kind of Candid. There are others, less dramatic, but just as important, news in the making, a fighting sports finish, strange accidents, unusual action, personality

Introducing MINICAM'S Candid Camera Editor, Karl A. Barleben, Jr., under whose byline will appear a monthly article devoted exclusively to the advancement of candid photography. The Candid Cameraman invites every fan to make this department his clearing house for information on new techniques, ideas and equipment. Whatever you want to know . . . ask the Candid Cameraman!

bum scratching his poll, the waiter tripping with a full load of dishes, Senator Whozis wowing a group of constituents—none of us is free from the efforts of the candid cameraman. And none of us is free from the candid bug. We photograph and are photographed!

Candid camera is a state of mind, not a piece of equipment. You can take candid shots with a thirty pound 8 x 10, if you're man enough, but why bother when your compact minicam will do the job better and more painlessly? Therein lies the beauty of Candid. Within reasonable limits it's not the camera; it's how you use it that counts.

Candid is the streamline way of picture making. Nobody wants still another pose of Joe Beautiful, Hollywood's latest he-marvel flashing his million dollar molars against the background of his palatial verandah. But give us Joe leading with his chin in a night-

and informal portraiture. Such pictorial records are worth a great deal and long after the professional straight stuff has been forgotten the candid shots will still be talked about and admired.

Candid is not necessarily done with the camera concealed. Perhaps you think the pro candid pix-shooter crawls about on his belly with his minicam hidden in some contraption. Not any more. That sort of thing is gone forever. Everyone today is familiar with the small camera. Modern technique is to admit frankly that you're after a picture but to keep concealed the exact moment at which you take it.

There are, of course, dodges you can use to conceal your activities from even the thoroughly camera-minded, but if such deception is needed, nine times out of ten it's better to abandon the whole idea. When a subject definitely does not want to be photographed

Candid Photos in a Hurry

By
*Karl A. Barleben, Jr.,
F.R.P.S.*



Author Karl A. Barleben, Jr., F.R.P.S., who sometimes gets a chance to knock off some candid shots himself.

—Photograph by Gene Lester

and when you are on private property or closer to him than the law permits for unauthorized pictures, you are liable to let yourself in for serious trouble if you persist. Candid camera activities are no different from any other hobby or sport. You can keep it on the level and have your fun, or you can be a hog and make things much tougher for yourself and every other candid fan who follows after.

Candid has changed the attitude, even the typographical dress of modern newspapers and magazines. The tempo of reporting has been enlivened, stories are more personalized. The picture, formerly a casual embellishment, is now of primary importance. Such papers as the *New York Daily News* and others throughout the country frequently rate the picture as more important than the actual yarn. This radical change is due almost entirely to candid photography and its revolutionary technique in picturing the news. It can safely be said that the miniature camera has been responsible for more advances in photography during recent years than any other single factor.

AS we said in our introduction, Candid was developed to its present honored estate by the professional news photog. As amateurs, you and I take some mighty fine candid shots—often better than those of the pro who must stick to his assignment. However, few of us bother to develop any elaborate technique because we have no deadline

to worry about. If we don't get what we want today, tomorrow is another day. We can wait.

Not so the news man. From the day he first hangs up his hat his existence is governed by two paramount rules—speed and accuracy. Tomorrow is another day, all right, but it's also another deadline and two or three other assignments. A good alibi is a beautiful thing but you can't plate it for the second edition. If the candid man doesn't score mighty consistently right he'd better start thinking about being president because his newspaper days are numbered.

Under those circumstances the ones who have survived and whom you hear about—Tommy McAvoy, Rudy Hoffman, Kip Ross, Pat Terry, Ifor Thomas, Peter Stackpole, Joe Steinmetz, Bob Leavitt . . . to mention a few . . . got there, and stayed there, by being able to deliver. I don't mean sometimes, or even often, but every day. Naturally, they developed individual technique as top notchers always do.

That's something nobody can teach you. It's like literary style or a good golf stroke. You keep banging away for months or maybe years and think you're getting worse instead



CANDID CAMERA SHOTS

1. Kill the umpire!
2. Three-point landing
3. Interlude
4. A quiet day at the beach
5. Oil well fire
6. High, Wide and Handsome

Send your favorite candid camera shots to the Candid Cameraman. Full details on page 91.

Tommy Weber of the New York Journal shows his flash arrangement with the Super Ikonta .B which he uses for candid shots.



of better until one day you slam a screamer down the middle of the fairway and you suddenly realize you've got the hang of it. Or else you shoot 110 for the rest of your life.

Candid is very much like that. First you learn the routine and after awhile you find yourself coordinating so that you never have to think about it again. It's the tricks we are concerned with now, the devices and methods that insure the pro candid cameraman his pictures and enable him to deliver them on time. If you examine a few of these stunts and short cuts you will be surprised to discover how many you can incorporate into your own working method and how your percentage of blanks will decrease.

First there's the little matter of exposure—whether you can get a recognizable image,



Rudolf Hoffmann in a characteristic pose which will be recognized by those who have seen him at his work.
— Photograph by Ivan Dmitri

or a collection of faint markings that resemble only an undernourished ghost. On "location" there is rarely time to fiddle with exposure meters. Find, aim and shoot is about the best you can hope for.



Alan Fisher, "magic eye" specialist for the World-Telegram, and his Robot, which he uses for his famous "sequence" shots.

Anyway, the available light is probably poor and even if you had a meter handy it wouldn't tell you anything. The solution is high speed lenses and/or high speed film.

Agfa Superpan, DuPont Superior and Eastman Super-X get about an equal play from the news boys. Yet there are occasions when even these are not fast enough to deliver and then the dodge of hypersensitization enters.

You can get hypersensitized film two ways. The easiest is to order it from the manufacturers if you can plan your work far enough in advance. Or you can prepare the stuff without too much fuss in your own dark-room.

Stepping Up Film Speed

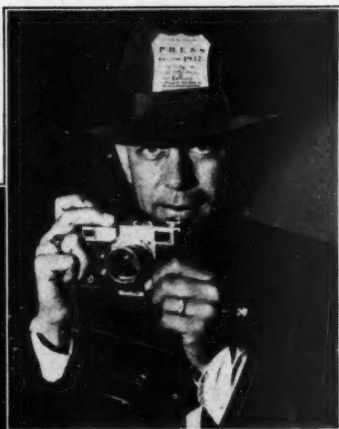
THERE are two basic methods used today for increasing the initial emulsion speed. The first is the ammonia method and it's pretty messy. You take the unexposed film and dunk it in a three or four percent ammonia solution for a couple of minutes. Dry rapidly and reroll. Film speed will be about double. Obviously the whole job has to be done in total darkness and that's not easy.

A variation of the above is to expose the film to ammonia vapors for a similar period. The only advantage is that you needn't worry about drying it, but you still have to work

in the dark and ammonia fumes are nothing to joke about. If you're not careful they'll lay you out cold.

A better and recently divulged method of hypersensitization was originated by

Jack Layer, ace New York Journal staff photographer proudly proclaims his membership in the candid camera scooper clan.
— Photograph by J. G. Lootens, A.R.P.S.



William Greene, President of the Press Photographers Association of New York and staff candid snapper for the World-Telegram (New York), has been actively engaged in the newspaper business for over twenty-five years.

the grain size and will work as well with slower, fine grain films as it does with the faster ones. The next time you see a candid pix that looks as though it had been taken with an "f point nothing" lens, you can safely bet mercury hypersensitization was used.

High Speed Processing

After the film has been exposed, the next problem is developing. While most pros still mix their own, the tendency to use prepared liquid developers is on the increase. Those which work in from eight to twelve minutes are the favorites. When the available light during exposure was bad, as it quite frequently is, high energy formulae are used. In another article we'll go into the problem of developers thoroughly. It must suffice now to point out that when you fool with these super-charged developers something has to give. Usually it's the grain size. You can't

Doctors Dersch and Luerr at the Agfa Ansco Corp. Research Laboratories. It's so simple and reliable that the ammonia method can now definitely be regarded only as proof of what a candid nut will put up with to get his shot. By the Dersch-Luerr technique the film is not touched or handled. In fact, it needn't even be removed from its wrapping. Here's the way you go about it.

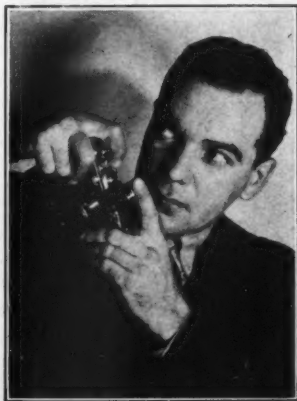
The film, roll, wrapping and all if you like, is sealed in a container, preferably glass, into which has been placed a small amount (approximately 0.5 gram) of liquid mercury. The film in its container is allowed to stand at room temperature for about a week after which its speed will be doubled. If you unwrap the film before sealing, the job takes only thirty-six to forty-eight hours.

Here's something else. If you treat the film by this process *after* exposure, rather than before, the action of the mercury is increased. Try it on the next roll you know darn well you had to under-expose. You have to see it work to believe it.

Mercury hypersensitization is positive and reliable. The emulsion is affected gradually and uniformly throughout the entire range of color sensitivity. In time, the increased speed slowly drops back to normal without ill effect on the film. It doesn't monkey with

(Page 90,
please)

Tommy McAvoy,
crack Leica shooter
for Life, the
picture magazine.
— Courtesy E.
Leitz, Inc.



2 Budgets For Beginners

HOW far will a camera dollar go? That depends on the amount of thought you bring to its spending. If you are one of those fortunate few who need not count expense, you can go pretty near as far as your fancy dictates. On the other hand, if you must make every dollar count, you will be interested in these two carefully balanced budgets MINICAM has worked out for the beginner in photography.

The budgets have been so planned that considerable leeway of choice is possible. Within the price range of the camera, for example, a number of excellent ones are available. Similarly, with enlargers. Each budget includes everything necessary for picture making, negative developing, and enlarging. Of necessity, prices will vary slightly, depending on equipment chosen and from one part of the country to another. Your local dealer will be glad to help you in your selection. Tell him that you saw it in MINICAM.

(Page 89, Please)



\$75.00 Budget. Includes a wide choice of cameras and enlargers to suit individual needs.



\$75.00 Budget. Accessory equipment includes everything necessary for home developing and enlarging.

Minicam LOOKS

BEATRICE Blinn, well known stage actress, is going on the Columbia lot for her first picture. It's all going to be done quietly, and with no more excitement or build-up than might attend a social call at the White House by a delegate from Mars. However, posterity must be considered, not to mention twenty million or so palpitating fans who will want to know every detail of the memorable occasion. So, reluctantly, it

An Out-of-Focus History of a Practically Typical Day in Wacky-Land

is decided to abandon plans for a simple little induction and admit the great public to a share in Miss Blinn's emotional experience.

This is where *Minicam* scores. A quick call is put through to us. We must make the rounds with Miss Blinn, record her reactions, follow her through the complex routine that is a day at a mammoth studio. It's a tremendous responsibility, but *Minicam* is equal to it.



1. The Little Red School House.

*A star rises and Minicam
is on the spot*



2. The Louisiana Purchase.

At HOLLYWOOD

Will Miss Blinn be nervous? How will she take her ordeal? Will any untoward incident mar the high perfection of her triumph? Will the Yanks win the World Series? Whatever the outcome, *Minicam* will be there beside her, his candid camera primed and ready to imprison the fleeting impressions of a moment that might otherwise be forever lost.

Let your mind's eye paint the thrilling scene . . . the air electric with tension . . . Japanese lanterns lend an air of old-world sadness . . . sturdy Bluecoats strain to hold back the milling throng. *Now Minicam enters . . . he's down . . . he's up . . . listen to that mob!*

Our first shot is at the studio gate. In the distance rises a mournful wail that, once heard, can never be forgotten. Old settlers claim it is the myriad ghost-voice of departed bit players signaling the arrival of a future star. Others say it is only the wind rustling

through the palms. Who knows? It's a good omen and we proceed on our way.

As Beatrice walks with determined step to the Casting Office and the candid camera catches the firm sweep of line and the graceful coordination of movement that is to characterize her every gesture on the screen, as soon as the press agents get around to thinking that one up. How many shattered hopes lie buried here, how many dauntless spirits crushed to the ground only to rise and



3. "Make mine Vanilla."



4. "If thy right eye offend thee, pluck it out."

be crushed again. Formerly spirits were crushed as they happened along, but these days, thanks to the quiet efficiency of a smoothly functioning organization, daunting is restricted to two mornings a week between nine and eleven and then by appointment only.



5. Seven Keys to Baldpate.

In the front office at last . . . Robert Mayo, Casting Director, proves that in a knock-down and drag-out smiling contest he can hold his own with any of them. *Minicam* records the frightful scene, probably the first of its kind ever to reach the outer world. The heat was terrific . . . old inhabitants



7. "May I have the next dance?"

said it had never been like that before.

The next shot is in either a hospital or a morgue, *Minicam* isn't sure which. Let's just pass it by quietly.

NOW comes one of those rare pictures you read about but never really see, like the Indian rope trick. John Wallace, head of the Makeup Department, happened to be passing by. In a twinkling he had Miss Blinn in his custody and *Minicam* was able to witness an ancient tribal ceremony that



6. "Where were you on the night of July 14th?"

has disappeared from most parts of the earth.

It's known as "autographing the eye" and consists of stippling a cross-hatch pattern just below the right, or good eye. It's original meaning has been lost in the mists of antiquity, but it is supposed to have some relationship with the modern Klieg eye. It doesn't take long.

In this land set apart, there are doors within doors. Miss Blinn and her faithful companion have reached the inner portal. Someplace along the way she seems to have acquired a box, probably her lunch, prudent girl. There really isn't much you can say about a door, anyway not today. The plain truth of it is that *Minicam* rather fobbed this one.

However, the next shot more than makes

up for it in dramatic and human interest value. William Mull, Assistant Director, is both overwhelmed and pleased at his latest stellar acquisition. He checks the time so that he may enter it accurately in the ship's book or log, as it is called. Miss Blinn is saying something, because her mouth is open, but her actual words are lost in the din of the mighty ovation that arises from a thousand throats. You can't see them in the picture, but at the lower left you can notice the heavy shadow they cast.

When a camera looks at a girl, that's not news. When a girl looks at a camera, as she



8. Calling All Cars.

does in the next shot, that's probably not news either. Nothing very much seems to be news any more. It's all pretty confusing.

LIGHTS! Camera! Sound! The center of this universe is Edward Bernds, the sound technician whose deft fingers twirling a dial determine whether the lady lisps or booms. Minicam built a blind of rushes to get this one, for sound technicians are notoriously timid and, when aroused, do not hesitate to attack even against overwhelming odds.

On the set, finally. Here is where the acid test is applied, four drops to a glass of water,



9. "You should have seen the one that got away."

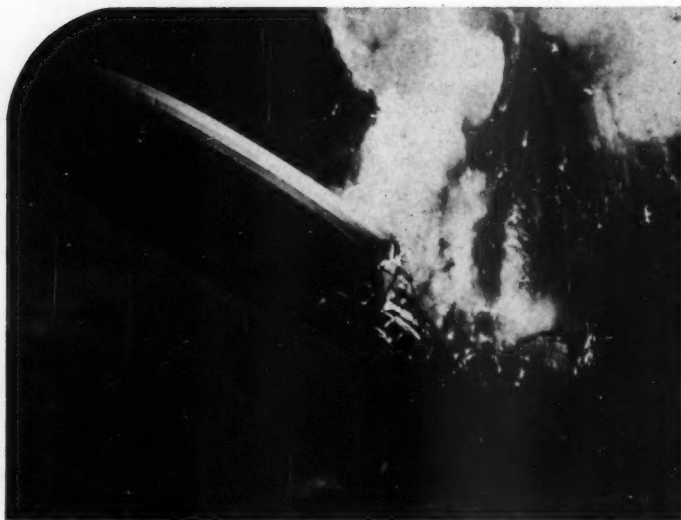
every two hours, until that dizzy feeling passes. There seems to have been an amazing amount of detouring to get here, but, as usual, *Minicam* is on the job. He catches Beatrice and the veteran script girl as they discuss the proper way to interpret a role or maybe fix a strudel.

That thing on the lady's lap is not "*Gone With the Wind*" or a bound file of *The Racing Form*, but a real, live scenario. It's not often that a genuine, unmangled specimen is caught by the camera so *Minicam* is justly proud of his bag.

But even the most conveniently packed day must draw to a close. Exhausted, but happy, showing little signs of her long ordeal, Miss Blinn passes her Customs declaration through the window for reentry into the United States. Thus on a happy note ends her first day in mystic Movieland and *MINICAM* has stuck it out with her, there were moments when it was a near thing.



ONCE in a LIFETIME



Acme Photo.

*As Told by Alan Fisher
Ace Candid Cameraman of N. Y. World-Telegram
To Paul Morris*

"THE movies have given people an altogether wrong idea about the news photographer," said Alan Fisher, ace photographer of the New York *World-Telegram*, as he took some prints out of the wash tray and squeegeed them on to the drying table.

A boyish grin lit up his face as he con-

tinued. "There's mighty little glamor and no romance in this business." And, to prove his point, he went over the assignment book, day by day, for some time back. One day he would have three or four routine jobs, another only one, while occasionally he would be assigned to illustrate a feature.

But when we reached a certain Thursday of last May, there was a complete change in his attitude. "Now that was a job!" he said, calling across the room to his "partner" Al Aumuller. "Come over here and help me tell the story of the Hindenburg."

Everyone is familiar with the ghastly details of the explosion and subsequent burning of the giant air liner, but few outside of the newspaper fraternity know of the difficulties encountered in obtaining the news and pictures that so shocked the world. Richard Harding Davis, when he wrote about "Gal-

Every news photographer dreams of the perfect story that will break when he is set, ready for action. The Hindenburg disaster was such an event, the most remarkable of its kind ever told in pictures, truly a "Once in a lifetime" assignment. Here are the inside, personal stories of the two men who were there, told now for the first time.

(Page 56, please)

HELL ON HIGH

Bill Springfield, Acme Crack Photographer, Tells His Story

"I was about 200 yards away from the mooring mast and had my camera set to make my first shot when all of a sudden, out of nowhere, there came a dull rumble and flames leaped out from the rear of the ship just forward of the tail fin. At the moment of the explosion a wave of heat struck me in the face. It sort of rocked me on my feet, but naturally, I started taking pictures.

"Instinctively I got my first shot, and then my second as she buckled in the middle. When she was about 50 feet from the ground the bow burst into flames. She dropped very slowly, 300 feet maybe in three or four minutes, and settled on her mid-section. Then, with the whole bag afire, for the first time we heard screams from inside the ship. On the ground behind me a woman was screaming, 'Daddy! Daddy!'

"I ran forward as fast as I could. I was greeted by figures walking toward me in a daze. They were terrible to see. Their clothes were burned off. Their bodies were burned. Their eyebrows were gone. Their faces seemed to be yellow-tinted by the action of the hydrogen fire.

"I moved in to a circle of fire-fighters, trained crews from the naval reservation with small emergency fire apparatus. They were in there at the risk of their lives. Naval



Custom's officer examining burnt cargo.

officers rushed forward and pulled us back. We had been close to one of the motors and its oil supply suddenly exploded.

"The sights were horrible. Dead bodies were all around. They lay on the circular track which surrounds the mooring mast. Some had their arms stretched out as if in a gesture of prayer. The whole thing was a nightmare. I just kept on taking pictures. Terrible as it was, it was made for cameramen.

"We didn't think of the risk to our own lives. The navy men were in there regardless, working to rescue survivors. We naturally went in ourselves. And we kept on taking pictures to the end."

Spectators watching burning of Hindenburg.



(Continued from Page 54)

lagher", and Elbert Hubbard, when he wrote the "Message to Garcia", never in the wildest flights of imagination dreamed of the hardships these men went through.

To begin with, Fisher had risen very early that day so he could be on the circus lot in Brooklyn at 5:30 in the morning, when the wagons rolled in. The circus plays under canvas in Brooklyn, and all metropolitan newspapers play up the small town angle. This was just a routine job. He took his shots and brought them to the office, where he developed them. By 2:30 the prints were on the picture editor's desk, and Fisher was on his way home.

Radio Flash!

He said he felt restless that afternoon, and determined to go to bed early to make up for the sleep lost the night before. Right after dinner, however, he walked with his wife to her mother's for a short call. While there, they heard a news flash over the radio about the destruction of the Hindenburg.

Fisher immediately called the City Editor at his home for instructions. "Get over to the office at once and load up. I've already phoned Al (Aumuller) to meet you there. And be sure to shoot everything you can." This last was hardly necessary. It was just the natural excitement of the occasion that made him talk like a movie city editor.

This was around 8:15. In an hour, the two photographers had collected all the plate holders in the office and had loaded up three big carrying cases with necessary equipment, including tripods, five bottles of flash powder, a big spread pan, twelve packs of



Moving patient from Paul Kimball hospital.

film and thirty flash bulbs. In the original carton, they brought along sixty more flash bulbs. For shooting, each had a Speed Graphic and Fisher had his Contax. All this paraphernalia was packed in a reporter's car, and off they went.

It was clear sailing until they reached Farmingdale, about twenty miles from Lakehurst. There they were caught in a terrific traffic jam. The road was blocked as far as the eye could see. Fisher got out of the car to see what could be done about breaking through, but it was hopeless. He went back to the car, and they discussed the advisability of turning back and trying to get to Lakehurst by another road, but by this time, they were so hemmed in by cars in the rear that they could not turn.

They were about to settle themselves for the night when they heard a siren in the distance. The three men perked up their ears.

"Let's grab those cases and run!" Fisher called to Aumuller, and they both ran to meet the ambulance, slowing up as it approached the jam in the road. Almost before it stopped, both photographers hopped on the running board, announced their identity and started to dicker for a ride. Much to their surprise, the driver told them he'd take them along if they'd promise to get him through the lines. However, they'd have to ride in back and keep out of sight.

Fisher, who was fortunately acquainted with the territory, having traveled it many times before, advised the driver to turn around, and directed him to a back road which led into the heart of Lakewood and thence to the main entrance of Lakehurst field. Here they ran into a snag. People in droves were milling about, but no

Through a window of ambulance from Paul Kimball hospital.



one was allowed in, regardless of who he was. The marines were on the job, and they meant business.

In the crowd at the gate, they recognized Jimmy Kilgallen, father of Dorothy Kilgallen, the modern Nelly Bly, and an ace reporter in his own right. They went into a huddle with him, despite the fact that he was with a rival outfit.

"Any chance of breaking through?" Fisher asked ruefully.

"Not a chance in the world around here. But there's a road about ten miles back that leads to a rear entrance we might try."

So again they piled into the ambulance. When they reached that gate, they found State Troopers on guard, with orders to permit none to enter. However, Aumuller knew

one of these men from Flemington.

"How about it, pal?"

"Beat it, buddy, or I'll run you in."

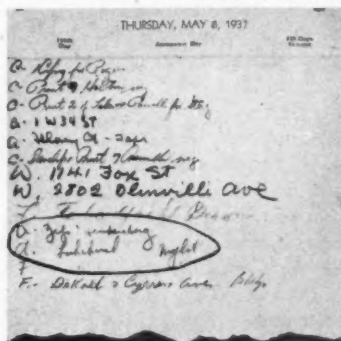
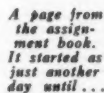
However, he did tell them about a gate a little way down the road, where they might be able to get through, "But don't say I told you so."

By this time the ambulance driver had become impatient and had left them stranded in as desolate a spot as one would care to imagine.

Stranded at Lakehurst

There was nothing left to do but to lift their heavy cases and start the trek to the other gate, only to find, when they reached it, a weary hour later, that the U. S. Marines were on guard. At this point, Kilgallen left them to see what he could do for himself, and the two weary cameramen picked up their cases, which by this time were heavy as lead, and getting heavier with each step. About a half mile down the road, they decided to hop the fence. This was six feet high, with three strands of heavy barbed-wire across the top. Fisher climbed over first, and Aumuller handed over the carrying cases. Then they started off on the long hike toward the lights of the hangar, which could barely be seen way off in the distance.

It had been raining most of the day and the field was a sea of mud. But they stumbled on. After what they had gone through, they couldn't quit now.



*A twisted skeleton,
the mighty Hinden-
burg settled to its
last berth.*



(Continued from Page 54)

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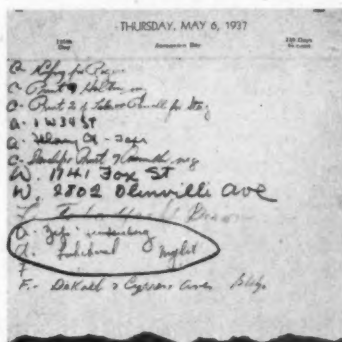
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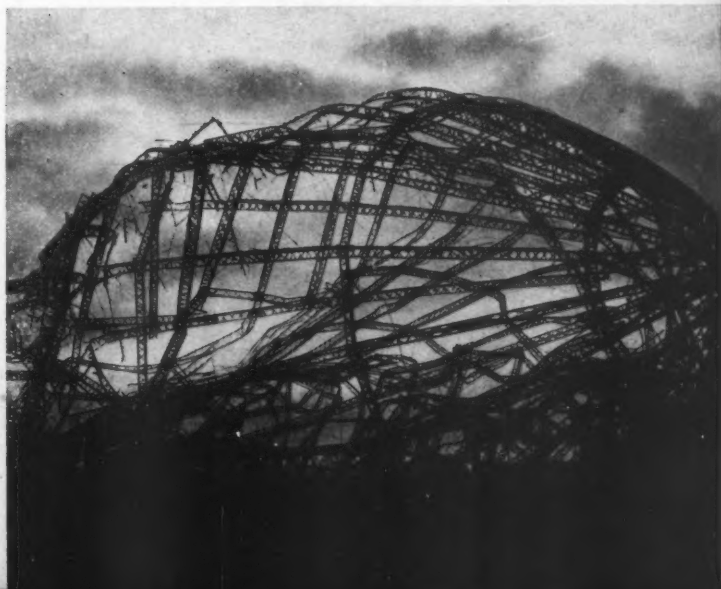
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A page from the assignment book. It started as just another day until...



A twisted skeleton, the mighty Hindenburg settled to its last berth.



In the meantime, some boys who had seen them go over the fence emulated their example, and the noise they made attracted the attention of the guards who immediately turned on a powerful searchlight which they flashed back and forth. They caught the



*Photographers snapping
the German Ambassador*

boys, but by quick maneuvering, Fisher and Aumuller were able to avoid the beam by lying down in the mud whenever the searchlight approached them, and going forward as far as they could before it came near them again. The night was so dark they could hardly see their hands in front of their faces, and more than once each fell heavily. Once, after climbing a little hill, Fisher fell several feet to the bottom on the other side.

And then, to cap the climax, after walking several miles, just as they reached the hangar, a cavalcade of cars including their own

reporter and their ambulance-taxi, came roaring down the road. It seems that by that time the authorities had relented and let down the restrictions on accredited newspapermen.

They immediately got busy with their equipment. Of course, the more important shots had already been made by the men on the field at the time of the explosion. One of the service men received a bonus of \$500 for the excellence of his work that evening.

However, there was still much work to be done. On this and other pages will be found some of the shots made by Fisher and Aumuller that dreadful night and following morning. So far as the dirigible was concerned, a guard had been placed about it, and no one was permitted to approach near enough to take a picture.

In the morning, however, a naval officer herded all photographers together in one place and told them:

"When I say 'Go' you will be permitted to take all the pictures you wish. But when I call out 'Stop', you will all have to quit."

This was done in order to give every cameraman on the field an even break.

Feverishly all went to work so as to get as many shots as possible into the allotted time. This was just after daybreak, and as the sun rose, the sky showed full of ribbed clouds. Fisher was shooting directly into the light, so he was adjusting a filter behind the lens when time was called. Without any ceremony, a big, burly seaman placed himself in front of the lens, kicked his tripod and said, "That's all, buddy."

Now came the task of getting their nega-

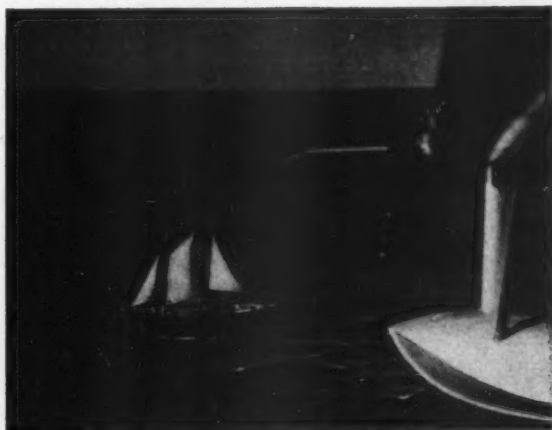
Waiting to photograph at daylight



tives back to New York. During the night, they had bumped into Bob Neff of the United Air Lines and had sent in all they had by that time, including hospital shots, injured passengers, customs officers salvaging mail and baggage, and whatever else they could get. They had no way of knowing whether or not that package of holders would reach their office; all they could do was hope for the best. Later, they learned that, immediately on landing, Neff sent them through by Western Union Messenger Service, and many of the prints appeared in the first edition.

Fisher also had made contact with Bill

"Of course," Fisher said, "such assignments turn up only once in a long while. On the other hand, all assignments are not altogether dull. Every once in so often, an interesting experience turns up, like the time I was sent to meet Joe Mitchell in a certain room at the Hotel New Yorker. When I knocked on the door, Joe opened it, and I stepped in. On a settee in the room was a pretty blonde, dressed in a kimono. Often we don't know what the assignment is all about, so I thought nothing of the unconventional attire and merely asked, 'Is this my subject?' Joe nodded, so I said to her, 'You get yourself ready, while I fix my camera.' She got



*Hunting a
post-prohibition
rum runner
from the air.*

Springfield, photographer for Acme Service (Scripps-Howard photo organization) who had been assigned to the landing and had caught some excellent shots of the burning ship, one of which is reproduced with this article. Springy had arranged by telephone for a plane to reach Lakehurst around six o'clock to pick up whatever he had ready and get it in for the first edition to supplement the first explosion shots which were delivered in New York seventy-seven minutes after the disaster. The plane, however, did not show up until two hours later, too late for the first, but in plenty of time for the second edition.

After being on his feet for more than thirty hours, Fisher was finally relieved at eleven that morning, when he climbed wearily into a car and slept the sleep of the just all the way into New York.

up and went into another room. In a couple of minutes, while I was bent over the camera, I heard a voice say, 'All right, I'm ready.' I looked up and there was this lady all dressed up in a G string and a smile. She was Tanya Cubitt, Queen of the Nudists."

Mention of Joe Mitchell reminded him of a trip they made together on a Coast Guard plane sent out to spot a post-prohibition rum runner. They found the schooner some twelve miles out and reported it by radio to a Coast Guard Cutter. In the meantime, Fisher managed to get some first-rate shots of the rum runner with his Contax Series I, using a Sonnar f1.5 lens in a day case.

A trip like that is all in a day's work, according to Fisher. In fact, he said, the flyer went into a dive to wake him up when they caught sight of the schooner.

How Much Contrast for

Measuring The Actual "Light-Value Ratio" Across The Face

Solves The Old Problem Of How To

Avoid Both "Flat" And "One-Sided" Effects

By Scott Pattison

HOW many times have you pointed your camera at what should have been a cheerful, well-lighted portrait only to get your prints back under-exposed and full of inky shadows? So far as you were able to judge there was plenty of light, perhaps even so much that you had to stop down your lens. Yet the picture was definitely a dud. And then you started to get advice!

Once a picture taker is no longer satisfied at just getting recognizable faces, and begins to judge his results as real informal portraits, he is on the spot so far as lighting advice is

concerned. On one hand, you are cautioned against flat lighting of the "sun-behind-the-camera" variety, or that obtained indoors when light from a single lamp or window falls uniformly across the face. The features must be "modeled in light", you are told—which sounds impressive, even if it doesn't mean very much.

Then, if you start placing your subjects so the light shines *across* the face, rather than in it, you are up against a contrary warning.

"Don't try such one-sided light without a sheet or other reflector on the opposite side,"

Fig. 3 Below
Highlight reading 200
Shadow reading 20
Reflector and position
of subject to reflect
light f8 1/5 sec.



Fig. 1 Above
Highlight reading 200
Shadow reading 10
No reflector used
f8 1/25 sec.



Fig. 2 Above
Highlight reading 200
Shadow reading 16
More reflector used
f8 1/25 sec.

INFORMAL PORTRAITS?

you are warned, "or you'll have a 'half-man' as a result. At a bright window, for example, be sure to maintain a light balance that will keep the contrast across the face soft and pleasant. And when sunlight is coming through the window, good portraits are just about impossible unless you're very careful about the contrast." This again is sound advice, but far from being of definite help. The question remains: "Just what is this contrast and how much contrast is *good* contrast?"

Let's tackle the problem in orderly fashion. To begin, light seldom strikes all objects with equal intensity. It is obvious that the portion of a face, for example, farthest from the light source will get the least amount of illumination. This holds true whether you are dealing with sunshine, Photofloods, or a combination of both. To complicate matters still further, objects of different color reflect varying amounts of light. Thus the great part of the light striking a white surface will bounce off and be reflected, whereas a considerable portion of that which strikes gray or brown will be absorbed.

When you pose your subject, these factors are getting in their work and creating a contrast between the lightest and darkest portions, the parts near the light and those away from it or in shadow; between light tones such as a white blouse, and dark, such as a blue skirt. Your eyes see nothing wrong with the scene because they can adapt themselves to a very great range of contrast and because they seldom take in a scene as a whole.

The film in your camera, however, is neither so versatile nor so obliging. It is geared to a definite "latitude", that is, a brilliance range within which it will reproduce the scene without excessive over or under-exposure. This brilliance range is merely another way of saying contrast. A photoelectric meter measures brilliance in terms of light units. The contrast of the scene is then readily determined by noting the ratio between the number of units reflected from the lightest and darkest parts of the scene you want to photograph.



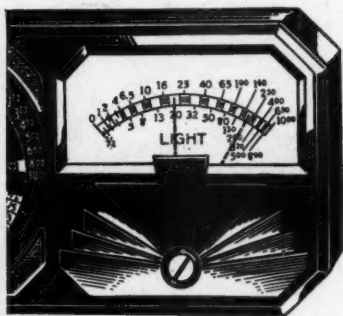
Fig. 4
Distance Brightness 320
1/16 1/50 sec.



Fig. 5
Face Reading 40
1/11 1/10 sec.

The three indoor portraits on page 60 are part of a series of experimental shots taken to reduce the problem of how much contrast is desirable to a practical basis of measured light values, *rather than guesswork*. Measurements were made with a photo-electric exposure meter held 8 to 10 inches away from the subject, first on the light side of the face and then on the shadow side, and the "contrast ratios" determined as explained above.

In Fig. 1, it is obvious that the contrast between the light and dark areas proved too great, and the portrait was a failure. Measured with a photo-electric meter, the



When taking portraits, the light-value scale on the meter permits a quick check-up on acceptable contrast across the face. If a "close-up" brightness reading on the bright side of the face reads 200, for instance, the shadow side of the face should give a reading of not less than 1/10 of 200, or 20. If it reads less than this, the light reflector and position of the subject should be changed to decrease the contrast to within this 10 to 1 ratio.

light values were 200 on the bright side and 10 on the shadow side, or a ratio of 20 to 1. Obviously this was too great.

In Fig. 2, a reflector used on the shadow side of the face raised the light value from 10 to 16, the bright side remaining at 200, so that the "light-to-dark" ratio became 200/16 or 12 1/2 to 1. Now our portrait is pleasant and generally satisfactory, although the eyes are still somewhat too black. This ratio of 12 1/2 to 1 between light values on the light and dark sides of the face may be considered the "borderline" level. Any greater contrast leads to a disappointing result, at least so far as ordinary types of film and developing practice are concerned.

Finally, Fig. 3 shows a completely satisfactory portrait. This time the position of the

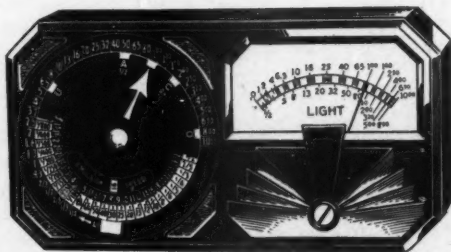
subject and camera has been shifted somewhat in relation to the sunlight and the reflector, and the boy's shirt serves as an additional reflector for the shadow side. Exposure meter readings now show a light value of 20 on the side of the face away from the window, or a "light-to-dark" ratio of 10 to 1.

Generally, a "light-to-dark" contrast ratio somewhere from 3 to 1 to 10 to 1, depending upon the particular tonal values desired, will give excellent modeling of the features, avoiding both the flat effect of even lighting and the "half-man" effect of one-sided lighting.

Although practically impossible to judge with the eye, these light values are easily measured with the photo-electric type of exposure meter, simply by taking readings eight or ten inches away from the subject on both the "light" and "dark" sides of the face. Once these two readings are known, it is a simple matter to adjust the reflectors as required and to select exposure settings that will bring both highlights and shadows within a pleasing tonal range.

Portraits Out-of-Doors

IN taking portraits out-of-doors, particularly under bright sunlight, an accurate knowledge of light values on the face is also often the secret of success. Exposure tables based on the time of day and sky conditions



A typical "average brightness reading" taken from camera position when normal tonal values throughout the scene are desired. The meter reads 100, so the normal arrow on the calculator dial is set at that point. On most black-and-white film, all objects in the scene with "close-up" brightness values between 6.5 (U) and 300 (O) will lie within the film range for all the f-stop-shutter speed combinations shown on the lower semi-circle.

may do for ordinary scenes, but when we start to combine sunlight and shadow, pleasing contrast is more or less a matter of luck.

For example, the average brightness of the scene shown in Figs. 4 and 5, when measured

(Page 88, please)

MINIATURE camera photography is one form of activity which defies exact definition. Rather than a method it is an approach that has absorbed the best of all photographic periods. From this selection has been created a new, flexible and ever-changing technique, successful because it encourages the worker to become familiar with its fundamental principles. Its specific goal is to produce better results from available materials than have been hitherto achieved.

The mere fact that you are using a camera loaded with 35 mm. film does not establish you as a miniature worker. This statement is so paradoxical that our basic definition should perhaps be further limited by some arbitrary boundaries.

Miniature limits have been tentatively established upon the old time standards of enlargement. Even today most of the printing



Pinaflex Makina

You and your **MINIATURE CAMERA**



Eastman Retina

projectors for larger negatives have a maximum enlargement scale of about four diameters, few more than five. Assuming that we wish to make exhibition prints of the usual 11 x 14 inch size, we find that the five diameter enlargement will demand a negative 2.2 inches wide or approximately $2\frac{1}{4}$ inches. For this reason we adopt the $2\frac{1}{4}$ inch negative as the largest acceptable as a miniature. As the $2\frac{1}{4}$ width automatically identifies the $2\frac{1}{4} \times 3\frac{1}{4}$ inch and the $6\frac{1}{2} \times 9$ centimeter, we place the maximum miniature negative at this limit.

Equipment and technique should be such that a satisfactory enlargement of ten diameters or more can successfully be made.

Miniature photography demands no superhuman intelligence, or hours spent at nerve-racking, tedious manipulation. The basic requirements are few. You can learn it if you

Modern Miniature Cameras

will give it one-half the time you would cheerfully donate to any other hobby.



Leica Model G with Summar 1:2 Lens

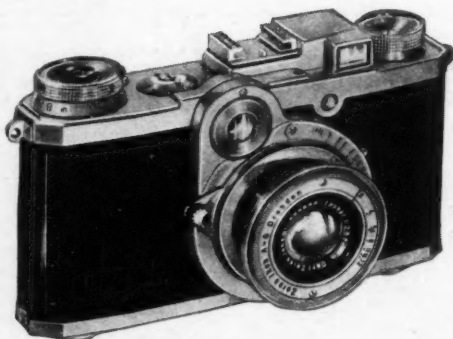
running water at least half the time to prevent chemical contamination by your fingers, the cause of most beginner's troubles.

Next you must learn that two seconds or ten seconds are not brief flashes but precise periods of time. When working with seconds and minutes, use a dependable clock—don't guess.

Successful photography of any kind largely depends upon your being sure of your amounts. Always use instruments for all measurements—meters for exposure, scales for weighing, clocks or watches for timing, thermometers for temperature. Be sure you are right—and many of your troubles will vanish.

It makes no difference what miniature camera you have, since all are fundamentally alike. A thorough understanding of the basic camera, stripped of its ornaments, will help immensely in becoming familiar with the proper technique of picture making.

Any camera, miniature or otherwise, is merely a light tight box, containing the sensitive film at one side and, in the side opposite, a hole to admit



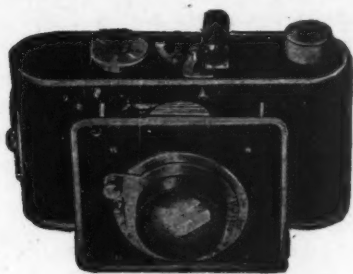
Zeiss Nettar

YOU must learn to follow directions literally. For example, you are given the proper formula for a fine-grain developer. With it you receive instructions for manipulation which too often you ignore as mere old womanish hair splitting. You are told just how to mix the developer, the temperatures to use, how long each step is to last and so on. Upon following these supplementary instructions to the exact letter depends your success.

Another thing you must learn is the difference between physical and chemical cleanliness. You may use beakers and laboratory equipment which fairly glitter with cleanliness, yet fail because invisible traces of some chemical remain within the glass. You have followed the usual standard of cleanliness while ignoring the foreign material which is in a location to endanger your solutions. Remember, all traces of one chemical must be removed from a graduate or tray before it is used for another. Likewise, when working in the darkroom you should have your hands in



Zeiss Super Ikonta B

Foth Derby with $f:2.5$ Lens

light. If this hole is small enough not even a lens is required. Everything else is accessory. Some of the accessory additions widen the scope of the camera while others merely contribute to the convenience of its operation.

The fundamental accessories which serve to increase the capabilities of the camera are, in order of their importance, the lens in its focusing mount, the shutter and the diaphragm. Other features are added for their ability to make successful photography easier, but a perfectly good camera could be built without any of them.

MODERN miniature cameras are chiefly remarkable in having their accessory equipment so accurately designed and executed that excellent negatives may be ob-



Eastman Bantam Special

tained with a minimum of effort.

The typical miniature camera usually has, among others, these features:

1. The camera body.
2. The lens and its focusing mount.
3. The shutter.
4. The diaphragm.
5. The finder.
6. The film transport.
7. The range finder.

There are, of course, a number of separate accessories which contribute to the convenience and accuracy of photographic manipulation, but of these we will mention at this



Baldaxette

time only the exposure meter because its use precedes the actual exposure. Before we try to make a picture, we should obtain some superficial knowledge of the various essential parts of the instrument.

1. THE CAMERA BODY:

Usually referred to as the "box". The chief function of the body is neither the support of the film nor the lens, but to provide between these two essential components a space of adequate dimensions which shall, except at the actual instant of exposure, be absolutely free from light.

2. THE LENS:

This is the eye of the camera. Its function is not to form the image; the rays of light do that. A small hole in the camera front will result in the formation of an image even without a lens. The function of the lens is the retention of sharp definition when using a large hole or opening. Without the characteristic lens action, such a large hole would result in total or partial loss of sharpness.

If a pinhole is used, the image has the same sharpness regardless of the distance be-



Zeiss Contax Model II

tween the opening and the film, or the distance between the hole and the object. But with a lens, the image is sharp only when these two distances are properly related. For this reason it is necessary to provide a method of lens adjustment to compensate for various object distances. This is the focusing adjustment of the lens.

3. THE SHUTTER:

Modern films are so sensitive that exposures of a minute fraction of a second are often



Telyt Telephoto Lens and Focusing Box for Leica Camera

sufficient. For that reason, devices known as shutters are provided to make the exposures automatically. Some shutters are made of a series of thin blades moving between the lens elements and are known as between-lens shutters. Others in the form of a cloth or metal curtain move across the face of the film, directly in front of it. These are known as focal-plane shutters. The exposure is made by a rectangular opening in the curtain, moved

across the film by the motion of the curtain itself.

Between-lens shutters operate as slowly as one second and as rapidly as 1/500 second while the range of the focal plane is from one to 1/1250 second.

4. THE DIAPHRAGM:

The diaphragm is a device for regulating the size of the aperture in the lens. The usual type resembles the diaphragm of the eye and for that reason is known as an iris diaphragm.

The actual duration of the exposure and the size of the aperture are necessarily quite



Collection of Lenses for Leica

closely related. Small apertures permit the passage of less light in a given period of time than do larger ones, so when the aperture size is decreased the duration of exposure must be increased and vice versa.

5. THE FINDER:

The operator of a camera must know what the limits of his picture are, that is, the limits of the "lens field". To provide this knowledge the camera is equipped with a finder which

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Zeiss Contax Model III

How Does Your GARDEN GROW?

By C. W. Gibbs

Natural Color Illustrations by Samuel Brown

MY favorite shots were sprawled over the table and they very definitely were not getting across. "Now take this one," I said, diving into the middle of a heap. "That's the time old Fred made a pass at a bee and missed. One look at his expression and you can see Fred knows what will happen next. I guess this is just about the best candid study I ever caught."

"Yeah," said my audience. "Let's have a drink."

And therein lies a story. The day inevitably comes around when your less photographic-ly minded friends begin to lose enthusiasm for the candid snaps of "old Fred" and positively refuse to look at just one more picture. It may mean the world to you but to them it's just that much more stale beer.

One thing, I can take a hint. I had been working pretty closely with color, mostly on the technical side — spectroscopic analysis and that sort of thing — and your dyed in the wool lab. man has a way of losing sight of his picture in the maze of charts and graphs. Also I had made a number of garden shots in black and white, as I suppose who has not. The resultant prints, however, were far from satisfactory. Small areas of black, gray and white can hardly be expected to yield even an approximation of the play and modulation of color to be found within a single blossom much less an entire garden. Now, reawakened to the need for pictures of more general interest, if I wanted to keep my friends, I decided to turn once more to the garden. But this time in natural color.

Not even the most charitable of my well wishers would dare claim I had any pretensions to botanical knowledge. I enjoy looking

at a well designed bed of flowers and I can appreciate the marvel of modulation, design and crafty engineering that is a half-open bud, but that's where my naturalist lore ceases. My prime interest lies, as I imagine does yours also, in a good picture. Being by training and disposition, too, a meticulous person, I learned a number of interesting facts about flower pictures I had never realized when I was working in monochrome. I'll try to pass them on to you in informal fashion approximately the way you'll encounter your own problems when you start shooting.

It's an awful temptation, when you first get going, to concentrate on shots of a large group of flowers or those which include the whole garden. Such pictures have their place in the general scheme of things, but a few will go a mighty long way. It's a mistake, I discovered, to try for as much color as possible in a film. All you get is a mad jumble with a number of small spots of various hues distributed haphazardly about. When you give an audience such shots to look at they get a confused mental impression as though they had been examining a number of crazy quilts.

A better idea is to have a strong point of interest, such as a closeup of a single flower or two. To isolate this from the out-of-focus background, it's a simple matter to construct a portable background of four light sticks and a piece of cloth, about two feet by four. This can be placed around the flower like a fence. In addition to being a good background it also helps prevent movement of the blossoms during exposure.

If you project your pictures you can apply a little motion picture continuity in shooting your color films. Make your long shot of the garden—you'll do it anyway. Then follow with a few closeups of the blossoms in their natural settings. Introduce a personal note by showing someone picking the blooms. Finally close with some pictures revealing the flowers tastefully arranged in a vase. It doesn't sound like much of a scenario but you'd be surprised at the wallop it packs. Try it for yourself.

On your closeups a long focus lens will help though a short focus will do if you don't mind a slight distortion that will be apparent only to the most rabid horticulturist.

Indoor flower shots offer amazing possibilities for creating knockout pictures. The trick is to achieve your effects with startling simplicity. An isolated spray of ivy against a cream-colored wall, for example, will be pictorially much more satisfying than a closeup of a bright red tulip. If you're going in for this phase of the game in a really serious way I can give you one good tip. There are books on Japanese flower arrangements reasonably priced and packed with enough composition ideas to last you a lifetime. Any bookstore will offer you a wide selection.

Even though the garden will have sufficient subject matter to hold you for a full season, there's a thrill in working with wild flowers that your formal garden can never duplicate. Here you're going to encounter a few problems because wild flowers have a nasty way of growing in sheltered surroundings or deep in dim woods. Much the best procedure is to pick them and do your photographing indoors. If you will wrap the blooms in wet newspapers or cloths and place them in water the moment you arrive home they will quickly recover their natural firmness.

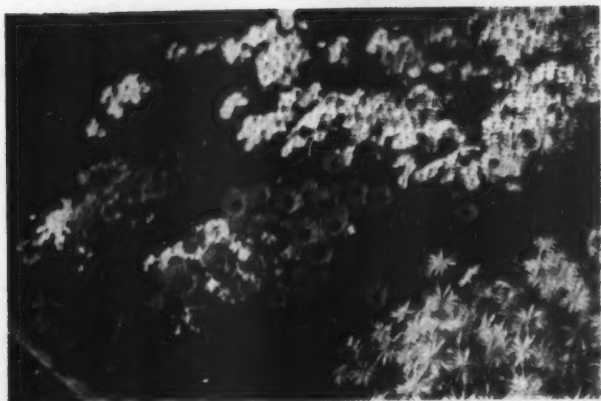
IF you insist on local habitat stuff you can borrow again from movie technique. Small, silver-painted cardboards or mirrors will catch what available light there is and throw it back on the blossoms as reflections. This carrying around of portable backgrounds and reflectors begins to sound like a job, but

if you want exact effects supplementary equipment is bound to be needed. It all depends on what you're after. To get the best out of your subject you've simply got to have at least a tripod, exposure meter, lens shade, reflectors and the little enclosure I mentioned a while back. I don't mean to imply that you can't get a picture unless you have all these trappings. But I do say that your pictures will improve in quality as your tools are better and more versatile.

Backlighting is another very effective trick in flower photography. It creates an illusion of depth, causing the flowers to stand out from their dark background. If the pictures are made with the sun at your back, the illumination will be as bright on the background as on the flower you are trying to emphasize. The result will be that the only difference between flower and background will be color. Here again you can get backlighting by waiting until old man sun gets good and ready to dish it out or you can lug reflectors and make your own backlighting. If you've got plenty of time the genuine variety will probably be superior.

Speed doesn't mean much with this sort of subject unless you are up against a windy day and then it is a sound idea to call the whole thing off. Normally you want full exposure and detail in the one or more flowers you are photographing. That means small apertures and consequently longer exposure time. There you have another advantage in flower pictures. You don't need a high priced camera or a powerful lens to turn the trick. But how you do need patience, as you'll soon find out!

There really isn't much more to know. Especially when you're out on a field trip, don't shoot the works on the first few groups you encounter. I guarantee that just around the next bend you'll discover a shot, after your camera is empty, that will break your heart. When you see your picture, don't back off and blaze away. A little extra time spent in planning, a half hour or so of waiting for the light to be at a more advantageous angle will bring those envious comments of, "How on earth did you manage to get that one?"



Natural Color Illustration by Samuel Brown



PAPER PRINTS

From Natural Color

By T. Thorne Baker, F. R. P. S.

SOME years ago I talked with a man whose sight had recently been restored after a long period of blindness. Inevitably I asked the usual question, "How does it feel to see again?" He was a particularly fluent talker and did his best to tell me, yet he failed utterly. It was a case where words simply could not duplicate the tremendous emotional surge of reentry into a world teeming with color and vitality.

Were I to meet that man today I would not have to ask him again because I know now precisely how he felt. Anyone who has ever sat in a theatre and experienced the sudden transition from a black and white film to a full color sequence must have experience that quickening heart pulse that is equivalent to scales dropping from one's eyes. Not until the dazzling play of natural color is flashed upon you can you possibly realize *how very much has been lacking in the conventional monochrome we have come to accept as photography.*

Heretofore in black and white picture-taking, the final photograph has consisted merely of various "densities" all of one color. We have relied for interest in our pictures upon dramatic emphasis of light and shade and a tonal as well as physical balance in composition. This means that whatever interest the final print possesses must be brought out by our ingenuity in composition, lighting or, in portraiture, by the successful record of a fleeting expression typical of the characterization desired. Who among us has not at some time upon viewing colorful images in his view finder, wished that it were possible to capture these colors with all their vivid interest and beauty?

THE amateur approaching color picture-taking for the first time should bear in mind that today *no special camera is needed to make color pictures.* Any hand camera with a reasonably good lens will do the trick. There are two manufacturers of photographic materials who are supplying color film in the American market at this writing. Eastman Kodak Company offers Kodachrome, available for such cameras as Leica, Contax, Retina, Argus, etc., taking perforated 35 mm. film, also film for the Bantam camera. Dufaycolor, Inc., for many years pioneering in color films, now offer Dufaycolor roll film and cut film to fit the majority of all hand, view, and studio cameras. The film of either manufacturer, except Dufaycolor film of the "cut film" type, is sold with the cost of processing included. However, the processing of Dufaycolor is simple and can be done by anyone at home. Full instructions for home processing are available from the manufacturer.

The main point is that the taking of the picture whether by Kodachrome or Dufaycolor is practically painless so far as complication is concerned.

When the color film is processed, you have instead of the ordinary black and white negative image, a positive image in natural color. When you look through the film, you get the impression that you see the natural colors of the original subject. In neither color film, however, are all of the colors actually present. This is not a shortcoming, but is inserted here merely to bring out an important point. All colors in nature existing in the spectrum can be produced by the proper combination of the three primary colors: red (red-orange), green and blue-violet. In other words, when

you add orange-red light to green light, you get yellow; when you add red light to blue-violet light, purple is produced. By varying the amounts of the various lights of each of the primary colors, any spectral hue can be delineated. It is this fact that makes color photography possible.

When you have in your hand a processed color film, you have a finished product, which must be viewed by transmitted light. All of the colors you see in a Dufay-color transparency are combinations of the primary colors. you add orange-red light to green light, you get yellow; when you add red light to blue-violet light, purple is produced. By varying the amounts of the various lights of each of The transparencies may be thrown upon a screen by means of a projector, or they may be mounted in front of an incandescent lamp, or framed and viewed by daylight.

Neither process provides color prints on paper as part of that particular process, though Dufay-color offers the newly developed service of making color prints from transparencies. It is interesting and well within the ability of any amateur to make these color prints. It must not, however, be assumed for one moment that a color print is as simple to make as a black and white print. It is not. Care is necessary—but any amateur who has equipment for making black and white enlargements and a reasonable amount of patience, possesses the fundamentals for making color prints. The usual type enlarger with easel is satisfactory for this work. However, a condenser type enlarger is recommended as a particularly good type for achieving sharpness and brilliance in the finished composite results.

Since the transparency which results from the development and reversal of the color film is the combination of the three primary colors, the first thing you must do in making a color print is photographically to "take the color transparency apart". Each separation will represent that part of the picture which is the composite of that particular primary color. These separation negatives, as they are called, are made on ordinary black and white panchromatic film. Each of these separation negatives have the transparency exposed on their sensitized surface through the specific filter that picks out and separates from the

others the actual color in the original transparency which we wish to record. Since there are three primary colors, we must have three of these separation filters. The technical name of these filters is "tri-chromatic" and they are usually designated as orange-red, green and blue-violet.

The color transparency to be recorded should be placed in the negative holder and focused, needle-sharp, upon a sheet of white cardboard held in position on the enlarging easel. This cardboard will, of course, presently be replaced by the actual negative material held firmly and carefully by all four edges in position when the process of making the actual separation is begun.

Since the three negatives for satisfactory results must all be of the same density and contrast if the final paper print is to be in proper color balance, it is essential to place in the negative carrier a transparent neutral density wedge along one side of the color transparency which is to be copied. (See color plate page) You can obtain these wedges from the manufacturers of the color film materials you purchase. It is also advisable to obtain from the manufacturers of the panchromatic negative film specific information as to the relative speed of the film. As the exposure must vary for each of the three primary color separations, the relative exposure can be determined by the respective filter factors. It is of utmost importance to know these factors so that equal density in each step of the wedge will result from each of the three exposure separations.

Until you have had some experience in gauging the amount of exposure necessary, it is a good idea to make a few trial exposures of successive lengths through one of the filters before obtaining the starting point for computing the filter factors. Diaphragm of the enlarging lens should be cut down so that the exposure through the blue filter will be approximately ten seconds.

After you are all set to make the exposure through the blue, the next step is to compute the exposure necessary for the green and the red filter. This is done by dividing the filter factor into the number of second exposure which you have chosen and then multiplying the result of this division by the filter factor for the next color. When you have deter-

mined the proper exposure for all three negatives you are ready to begin to make your separation set. Your enlarging camera must be fixed rigidly so that during the making of the separation negatives it will not vibrate in handling and as a result blur the image.

NOW to proceed with the actual making of the negative separations. Put a sheet of the panchromatic film in proper position on the enlarging easel. Place the blue filter over the lens and make the exposure previously determined. When this has been done replace the film thus exposed with a fresh sheet and duplicate the procedure this time using the green filter over the lens. The procedure is repeated a third time with a sheet of panchromatic film and the red filter. As each of the three negatives is exposed it should be marked in the corner with a negative marking pencil. The usual symbols are the letter "B" for blue, "R" for red, and "G" for green. This enables the separations to be subsequently identified since no color appears in the negatives themselves and even the most expert color worker would find it difficult to tell them apart.

Development is the next step. The formula recommended by the film manufacturer should be prepared for use in a tray large enough to accommodate all three films side by side. The three exposed films must be placed in the developer *together* because any attempt to develop them one after the other will result in unequal characteristics of the three images.

The negatives should, of course, be developed fully, but emphatically not to the point of extensive contrast since the color print would suffer from the very qualities of contrast which are so desirable in black and white picture making. It is best to be informed as to what contrast can be obtained with the film and developer you are using and develop to a gamma between .7 and .8 for best results.

Development completed, the red and green negatives should be simultaneously removed and placed in the wash-water. It will be necessary to carry the blue filter negative through a longer development time, usually an additional 25 per cent more than is given to the

red and green. When the negatives are thoroughly washed and fixed, and washed again, they should be hung up to dry, care being taken that each is held by the clip in the same relative corner. This precaution is necessary because the slightly stretched films must shrink in the same direction so as to maintain the exact registry of the three images. When the negatives are dry you will discover, upon examination, that the dense portions represent those parts of the original transparency which contains the primary color transmitted by the separation filter.

Our job of making a color print is now half complete. From this point there are three commonly accepted methods of making paper prints—Carbo, Cromotone, and Wash-off Relief. Each have points of similarity yet differ in important ways. Briefly, these methods may be described as follows: In all three, positive prints are made from the negatives. Each print is colored in the exact complementary color of the filter used in making the negatives. Thus on the negative in which the red filter is used, the positive print made from that negative is colored minus red which is a sky blue. The negative which was taken through the green filter is colored a minus green which is a magenta red. Finally, the negative taken through the blue filter is used to make a positive print colored minus blue which is a bright yellow. Thus, whatever the process, the first step is the making of three positive prints colored magenta, yellow and blue. These colors are known as the subtractive primary colors because each of them represents the color remaining in white light when one of the primary colors is subtracted from the white light.

The actual working procedure for creating the finished positive print by any of the three basic processes cannot be covered within the limitations of a single article. In future issues the various methods will be considered in detail by experts in the respective techniques.

Making color prints is one of the most absorbing new hobbies open to camera fans eager to try something new and interesting.

ACTION SHOTS

PRIOR to the introduction of the modern precision miniature camera the problems of photographing stage and ring pictures were beyond solution by the amateur. Such photography was done by a few specializing professionals and Press photographers. The pictures were especially posed or flashlight shot by special permission. The little camera, equipped with superspeed lens and superspeed film, has opened this field to everyone. Owners of these cameras are not always discrete and some theatres and sporting events are closed to amateur photographers because a privilege once graciously granted, has been abused.

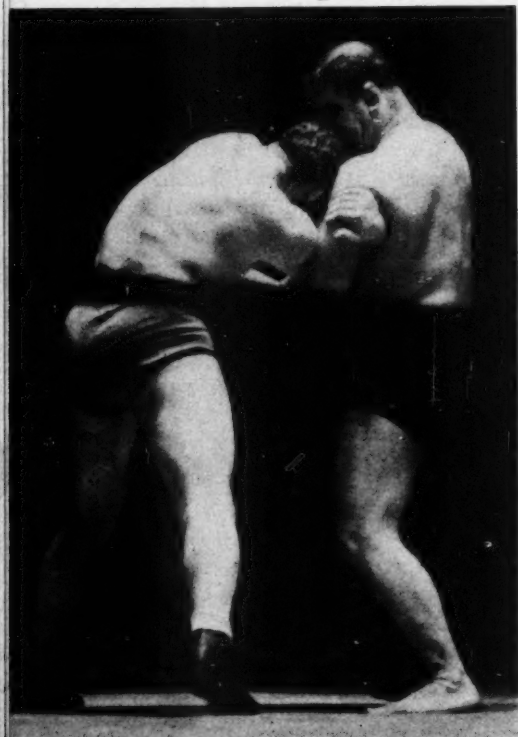
Before we consider the strictly photographic problems, there are two matters I desire to mention. I strongly advise against the surreptitious use of the camera in any theatre

The author is famous for his magnificent action shots of boxers and wrestlers. In this article he reveals many of the secrets of successful photography under adverse light conditions. All illustrations accompanying the article were made by Mr. Pepper. Included also is a valuable depth of focus table for lenses of varying speeds and focal lengths.

arena. A proper identification and an explanation of the use to be made of the pictures, will, in most instances, bring permission and prevent much annoyance. Remember, you are not news photographers with the influence of the Press behind you.

The next point I wish to drive home is that haphazard "shooting" in the theater usually results in failure. You should view the show at least once before attempting to make exposures. Study the sequence and importance of each scene, make program notes of the composition, the quantity and quality of the light used with each important scene. You must determine the best location for your seat, based upon the stage location of those scenes of greatest photographic potentialities. All these facts should be noted upon your program and studied so that, within limits, your work will be more or less subconsciously performed when making the actual shots.

AT boxing or wrestling matches, you cannot, unfortunately, do any of this practical preliminary work. Your success will depend upon your knowledge of the particular sport; of the wrestlers or fighters, their style, their pet holds or punches. You must train yourself to act quickly, to anticipate and grasp the right moment. The contestants move rapidly in and out of the depth of field of superspeed lenses so you must have absolute control over your camera and lens. All this may seem bordering upon the impossible but it is really surprising how readily you



Under Artificial Light

By H. Crowell Pepper

plenty of light of good actinic quality it is possible to make snapshots indoors with a cheap camera and a slow lens, but unfortunately there is never enough of such light in the theater or ring to permit the use of any but the fastest lenses and film.



"Action!"



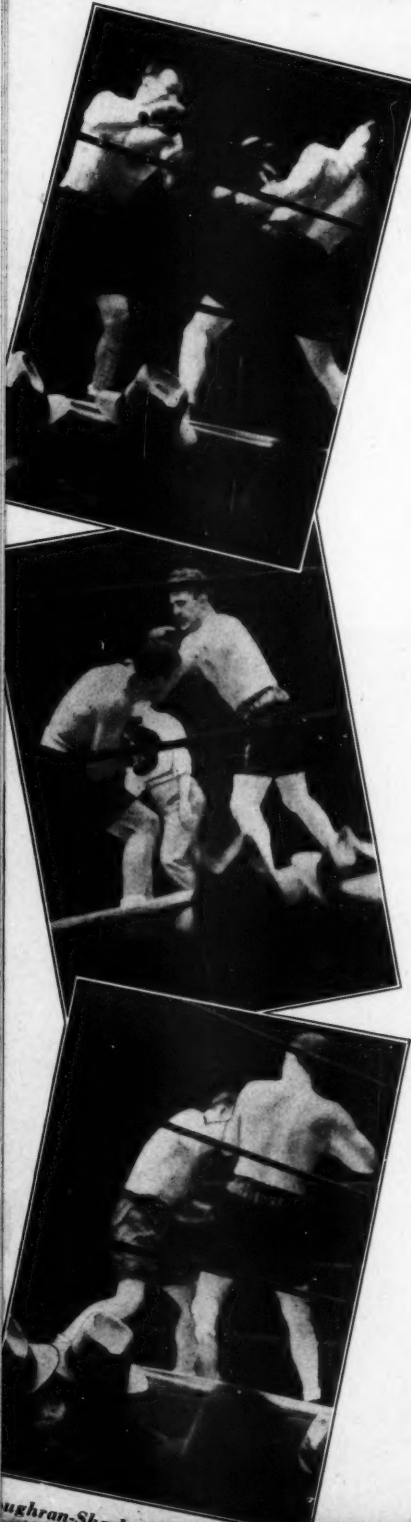
"Waltz Modern"

acquire ability to coordinate after a bit of practice.

Turning our attention, now, to the photographic problems involved, our first consideration must be the quantity and quality of the available light. Upon these depend our selection of camera, lens, film and the determination of the required exposure. Given



Bestrice Lillie



Light varies inversely as the square of the distance, and while, mentally, we may conclude there is plenty of light, we are apt to find our judgment faulty when we develop the film. Our eyes accommodate themselves to great changes of light so that we are hardly conscious of the actual quantity and quality value of the light for photographic purposes. Lenses and film do not react similarly. Often the lights are so situated that, while giving sufficient illumination for the highlights, they fail to illuminate the shadows and halftones. In such cases, even if we are able to use a shutter speed sufficiently long to give shadow detail, the contrast range is too great and the highlights would be simply white paper with no detail.

I cannot stress too strongly the importance of photographing only those scenes bathed in a balanced light. The majority of failures in this type of photography are the result of unbalanced light. True, you have no control over the lighting, but you can select your seat so as to avoid the greatest contrasts and photograph the scene from the lighted side. Objects under spot lights should be photographed from the front using much shorter exposures.

THE next problem pertaining to light is its quality. This is particularly true in theatrical photography. Most theatrical lights are gelatined, that is, they are covered with colored gelatine sheets to soften and color the light. Raw light is seldom used, even in spotlighting. Our eyes can accommodate themselves to colors and contrasts, but films cannot to the same degree. Under normal conditions the light to which the eye is most sensitive lies in the green, and when the light is decreased in quantity this sensitivity shifts toward the blue. Photographic emulsions are least sensitive to this green but fortunately are sensitive to blue. This blue emulsion sensitivity exists in panchromatic films. I have been successful in making good negatives of a stage scene lighted by a soft blue light where, when the light changed to green, I failed miserably. Due allowance must be made for the color of the light in determining the exposure and further in determining whether the scene can be photographed at all.

The Camera. For indoor speed photography the modern precision miniature camera is undoubtedly the best. It should be small and inconspicuous; one with an accurate range finder coupled with the lens; one that may be loaded quickly and easily; one which permits quick changes of lens diaphragms and shutter speed settings. There is a real advantage in being able to use lenses of different focal lengths, and much may be said in favor of cameras permitting thirty-six exposures at one loading. There is a convenience in

being able to wind shutter and film simultaneously. You will be working rapidly and the fewer mental hazards the better results. Miniature cameras of the reflecting type, while wonderful instruments, are not so well suited for this work as those generally used at eye-level.

Whatever camera you select learn to use it automatically. School yourself to manipulate your camera quietly and efficiently, to keep your head when others all about you are losing theirs. Calmly to expose a film of a wrestler being tossed over the top rope above you is far from easy.

I am convinced that the range finder is a necessity. It is difficult enough to judge distances in full light and almost impossible in low light. With a range finder coupled with the lens one may follow the subject action and keep the subject in sharp focus, an important factor when using the high speed lens.

Lens. The problems in this branch of photography are so exacting that success results primarily from the selection of the finest possible equipment. The lens is the eye of the camera and we should secure the best lens of high speed and short focal length. Occasionally we may use a lens with a speed of $f2.8$ or even $f3.5$ but not often. You really need a lens with a speed of $f2$ or $f1.5$.

I realize that the statement just made may prove discouraging to some readers who do not possess these superspeed lenses. There are always exceptions to rules and often ways and means to overcome, at least partially, some of the difficulties. If you do not own such equipment you may expose upon subjects

with little or no motion or select the point or moment of suspended motion, an art in itself. There are hundreds of such opportunities.

SUPERSPEED lenses are specialties. Their corrections for optical defects are not so good as found in slower lenses. Fortunately some lens makers have recently introduced lenses with speeds of $f1.5$ and $f2$ and focal lengths of 50mm., 85 mm., and 90 mm. corrected to a remarkable degree for chromatic and spherical aberrations. It is not advisable to use lenses of these speeds of a greater focal length than three and one-half inches (90 mm.) since the depth of field becomes too shallow. By depth of field I mean the distance before and behind the plane of absolute sharpness in which objects are sufficiently sharp for practical purposes. This depth of field depends upon aperture, focal length and distance of object. The following table will give you some idea and it is important for you to know something of the subject if you hope to be successful. The table covers lenses of 50 mm. and 85 mm. focal lengths, apertures of $f1.5$ to $f2.8$ for circles of confusion of $1/500''$ and $1/750''$, and object distances of 10, 15, 30, and 50 feet.

One brief reference by way of illustration: Suppose you want to know the depth of focus of a 50 mm. lens at $f1.5$ when the object is ten feet away. You know the disc of confusion of your lens is $1/500$. (This information is supplied when you buy the lens.) Looking at the table, you find the numbers 108 inches and 133 inches. The depth of focus is therefore the difference of these numbers, or 25 inches. Everything 12 inches before and 13 behind ten feet (120 inches) will still be sharply reproduced.

STOP	FOCAL LENGTH	DEPTH OF FOCUS TABLE							
		DISC OF CONFUSION $1-500''$				DISC OF CONFUSION $1-750''$			
		10'	15'	30'	50'	10'	15'	30'	50'
1.5	50	108 - 133	158 - 208	282 - 498	410 - 1117	113 - 128	165 - 198	304 - 442	458 - 868
2	"	107 - 136	152 - 221	263 - 571	372 - 1568	111 - 131	160 - 205	289 - 478	425 - 1020
2.8	"	102 - 145	144 - 243	237 - 746	322 - INF.	108 - 135	154 - 217	268 - 550	381 - 1416
2	8.5	115 - 125	170 - 192	319 - 413	494 - 762	117 - 124	173 - 188	332 - 394	525 - 700
2.8	8.5	117 - 128	166 - 197	305 - 438	462 - 855	115 - 125	170 - 191	321 - 409	500 - 749

Otherwise stated, your object has a movement range of 25 inches. All objects or parts of objects 12 inches in front and 11 inches behind the plane of sharpest focus will be sufficiently sharp for an enlargement of five diameters, and all approximately 7 inches before and 8 inches behind will be sharp at approximately eight diameters.

Selection of film. There are so many excellent films of the type needed for this work that selection becomes a matter of preference. The color content of indoor light makes the selection of an extreme speed panchromatic film imperative. Among these are DuPont Superior, Agfa Superspeed and Eastman Super-X.

Exposure. The difficulty of giving any definite exposure times of sufficient accuracy to meet all conditions is obvious. There are too many variables. The quantity and quality of light is important. The former you can regulate by the lens aperture—about the latter you can do nothing. You may control the time element by the shutter speed. You can purchase superspeed emulsions.

Photo-electric exposure meters are helpful but must be used with judgment. The angle of inclusion of the cell is usually too great and allowance must be made. Nor is the cell affected to the same degree by the color of the light as the film emulsion.

There are times when action is so rapid it is necessary to compromise between correct exposure and slight object motion. In practice I generally take a meter reading merely for a general indication of the light value. Under spotlights, however, light conditions materially change. I have made successful negatives of dancers under "spots" with exposures of 1/500th of a second using superspeed panchromatic film and lens speed of $f1.5$. At ringside, I have photographed wrestlers in action at 1/100 second using lens speed of $f1.5$, and superspeed panchromatic film, when the light was approximately 7500 watts, all overhead at a height of fifteen feet. A shorter exposure could have been used but the film was to be developed in paraphenylene-

diamine-glycin.

Development. In this work development becomes an important factor. Our negatives are small and we naturally require large prints. The use of superspeed films brings the problem of securing, through development, a fine-grain negative. This may only be done by using a developer of the paraphenylene-diamine-glycin type. Such developers are noted for their loss of emulsion speed in development. Exposure must therefore be on the full side. This does not necessarily mean double normal exposure, as has so often been erroneously stated. Whether more active developers may be used depends on the size of print wanted.

After compounding and experimenting with several hundreds of developing solutions, I have found the following formula most satisfactory.

Distilled water.....	16 ozs.
Sodium sulphite (anhyd).....	1¼ ozs.
Paraphenylene diamine (base).....	90 grs.
Glycin	15 grs.

For smaller prints the Eastman Fine Grain Developer and several Edwal formulae are good.

Develop for twenty-seven to thirty-five minutes at 65° F., depending upon the desired contrast. Rinse for two minutes in a bath of Water 32 ozs., Chrome alum, 1 teaspoonful, Sodium bisulphite, 1 teaspoonful. Fix in an acid hypo bath, wash in running water for thirty minutes, swab with a fine viscose sponge and dry in about ten minutes.

Such processing has enabled me to make 16x20 inches glossy enlargements from a small portion of my 24 mm. x 36 mm. negatives without undue grain.

I must close with the realization that the story is but half told. Success will be assured if you apply yourself, analyzing each failure and profiting by your mistakes. In the words of Richard S. Storrs: "The rules which experience suggests are better than those which theorists elaborate in their libraries."

(Continued from Page 66)



Rolleicord

shows visually the area which will be included in the picture.

6. FILM TRANSPORT:

Professional cameras are loaded with one plate or film at a time, but with miniatures it is important to have the sensitive material ready for use in rapid succession. This is accomplished by having the film in a roll from which the desired amount is fed forward

by means of the film transport mechanism.

To keep accurate track of the amount of film used, an exposure counter is provided. In the larger sizes this is merely a window in the camera through which numbers on the paper backing of the film may be seen. Smaller cameras, using film without a paper backing, have the mechanism connected with an index wheel which indicates the number of exposures made.

7. THE RANGE FINDER (OR REFLEX VIEWER):

The one essential requirement, after the exposure determination, is to have the lens distance properly adjusted. Guessing is worthless, so the usual modern miniature has a range finder coupled to the lens to indicate the proper adjustment of the lens. Still others of the reflex variety focus on a ground glass through a twin lens system. Supplementary range finders are of course available for cameras not provided with a built-in device.



Rolleiflex

Making the Exposure

AS we shall learn later, the negative is a result of exposing the film to a light of predetermined intensity for a predetermined period of time. The evaluation of the light intensity and the corresponding lens adjustment present the major serious problem to the modern amateur. These elements of a single problem are solved for him by the use of the exposure meter, an accessory to which detailed attention will later be given. For the present we merely wish to state that the meter should be used, and used properly, to determine the exposure.

When the exposure has been determined, the solution of the problem will be an "f" number representing the aperture in the lens (corresponding to a similar number on the



Kine Exakta

lens barrel ring), and a figure which represents a fraction of a second.

At this stage, select a combination which has as the aperture or "f" number, 8 or 9, set the aperture to this number and leave it there. Then set the shutter speed indicated by the meter for $f/8$ or $f/9$. If there is no exact speed to correspond to the reading, set it to the nearest lower marking. Later you will learn how and when to use all the apertures, but 8 or 9 is a good one to start with—it covers a small multitude of errors which are almost inevitable at first.

Lift the camera until it rests firmly against your face. Get into the habit of using such support. When the camera is held freely away from the body even an exposure as short as $1/100$ of a second is not enough to prevent vibration.

After you have found a comfortable way to hold the camera firmly, make sure the

(Page 82, please)

High Quality NEGATIVE DEVELOPMENT

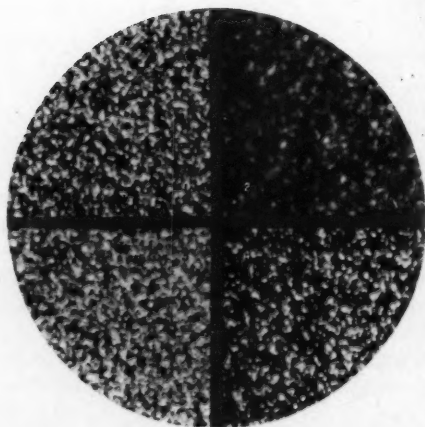
PERHAPS there is nothing more common in the world of photography than the introduction of a new developer. Few justify the extravagant claims made for them when they are actually put to sober test. *Minicam* is, therefore, all the more glad to offer its readers news of a high quality developer, about to be released, and which it has had an opportunity to submit to exhaustive tests. on the basis of reports submitted by impartial and widely known photographic authorities, working independently, this preliminary analysis is offered.

The outstanding characteristics of the developer may be summarized as follows: It produces a full normal contrast, with a smooth, delicate gradation. The grain is

amply fine for twenty to twenty-five diameters, which is quite enough for all reasonable purposes. In addition, it is absolutely non-staining, and this applies to the fingers as well as to the negative itself. It has an extremely long life, developing easily thirty rolls to the quart without time increase or replenishment. Amateurs subject to metol poisoning will be glad to know that as a result of internal reactions within the developer, the irritating effect of metol (a variant of which is in the solution) is apparently neutralized. People exceptionally subject to metol poisoning have worked repeatedly with this developer without experiencing the slightest reaction to it. It contains no paraphenylene diamine.

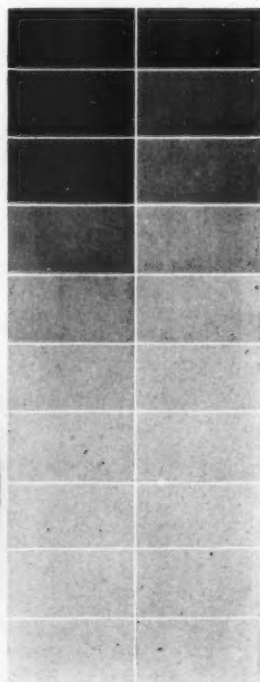
The manufacturer states that no formula is

The contrast produced by the new developer as compared with a standard paraphenylene-diamine type developer. The fuller range of tones of the new developer is strikingly shown by these step-wedges produced under the same general working conditions.



MICROSCOPIC ANALYSIS OF FOUR DEVELOPERS

1. *Infinol*, fine grain structure, even distribution, good contrast.
2. *Metol-hydroquinone*, Heavy, irregular grain, good contrast.
3. *Paraphenylene-diamine*, Fine grain structure, even distribution but low contrast.
4. *Borax*, Irregular distribution, moderate grain structure, good contrast.



available for publication inasmuch as three of the basic ingredients are new compounds evolved by the chemist-inventor. For the time being, therefore, the developer will be supplied only in the prepared form. Later, when the supply exceeds his own needs in making the prepared solution, the distributor plans to market limited quantities of these new ingredients for home mixing by amateurs.

We publish herewith a truly sensational photomicrograph of comparative grain size as produced in a negative by the developer under question and by three standard fine grain formulae. Taken by *Minicam's* Technical Editor, Herbert C. McKay, the photograph offers visible proof of the exceptionally fine grain yielded by the new formula. All negatives were the same emulsion, subjected to identical conditions of exposure, development, drying, etc. Similar tests conducted by independent workers indicated comparable results.

It is, of course, impossible to enter into extended discussion without knowledge of the basic formula. *Minicam* therefore offers its findings on the basis of tests alone. Of greatest importance, and worthy of restatement, are the non-poisonous and non-staining qualities of the product which is to be marketed under the trade name of *Infinol*.

While tests have not been possible with all the films on the market, the following have been tested and the times indicated are those for average normal contrast. As this is a full control developer, the times may be altered within wide ranges to secure any desired degree of contrast.

E. K. Super-X	65°	25-30 min.
E. K. Supersensitive Pan....	65°	15 "
E. K. Panatomic	65°	15 "
Agfa Superpan	65°	15 "
Agfa Plenachrome	65°	15 "
DuPont Micropan	65°	10-12 "
DuPont Superior	65°	20 "
DuPont Parpan	65°	20 "

How to make a
Photo Mural, Photo Screen,
and other Decorative Panels.
Complete Instructions
in October Issue of
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Minitur, two size, makes 8 full V.P. or sixteen 1/2 V.P. with F3.5 Trioplan lens Compur shutter.....	24.50
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Ikonta A, 1 1/2 x 2 1/4 with F3.5 Tessar lens, Compur shutter, leather case.....	39.50
Rolleiflex, 4x4cm with F2.8 Tessar lens, Compur shutter, eveready case.....	75.00
Kawee, 9x12cm with F4.5 Tessar lens 5/4", 3 holders, F.P.A.....	37.50
Graflex, 3 1/4 x 4 1/4 Model D with F3.5 Xenar lens, F.P.A., case.....	99.50
Weita, 2 1/4 x 3/4 with F3.8 Cassar lens, Compur to 1/400, 3 holders, F.P.A., case.....	34.50
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You and Your Minicam

(Continued from Page 79)

shutter is set at the speed indicated by the meter reading for f/8 or f/9. Look through the finder and locate the object. If the arrangement looks right you need do no more "composing", but if the object seems too small move closer. Conversely if it is too large and exceeds the limits of the finder, move away. When you have the desired effect, look through the range finder and operate the control until the two images of the object match up perfectly. If you are using a reflex type camera you will of course sight and focus simultaneously. Now press the shutter release.

Go through these simple movements with an empty camera and practice making exposure readings. A couple of hours rehearsal will give you a world of self confidence. When you are familiar with your instrument, it is ready to be loaded.

Here is a point where a bit of extravagance will repay you a hundredfold. Purchase an old cartridge of film from your dealer, or even a fresh one if he has no old ones. Load the camera, following the directions in the instruction book to the letter. Then put that roll through your camera. Wind and expose until the film is used up, then open the camera and look at the arrangement. Now remove the exposed film or rewind it, if this operation is necessary (as in the Leica). Unroll the film and rewind it in the cartridge (if this was not done in the camera) and repeat at least half a dozen times.

And now you're ready actually to make your first picture. Your practice film has been ruined so place a fresh roll in the camera.



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will bring a greater precision to your miniature camera. Unlike other exposure meters of the optical type, Leudi shows the exposure factor instantly and does not require an arbitrary accommodation to the human eye. It can be held conveniently at ordinary reading distance. Uniquely small, extremely dependable, simple to operate, most reasonably priced, Leudi is indeed the most popular of optical exposure meters. In attractive case, only

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The most versatile tank made, Perplex accommodates any and all of the following film sizes: 127, 117, 120, 116 and 35 exposure 35mm. film. Simplest in operation. It is unencumbered with Apron or

other complicating gadgets. It is rounded, has no holes and no corners where sediment might possibly gather. Constructed entirely of Bakelite, it is altogether impervious to the action of photographic chemicals. It is moderately priced at only.....

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NEW YORK

See how easily it slides into place now that you have begun to educate your fingers? Close the camera carefully and bring the film into shooting position. Set the exposure counter to "0" and you are ready to go.

Make the exposure reading, going close to the object to obtain this. Meter readings from the camera position are more often than not entirely wrong.

Set the camera as you did earlier, wind the shutter, raise the camera to your eye and see that it rests firmly. Locate the object, focus with the range finder, check through the finder and press the button.

You have taken a picture.

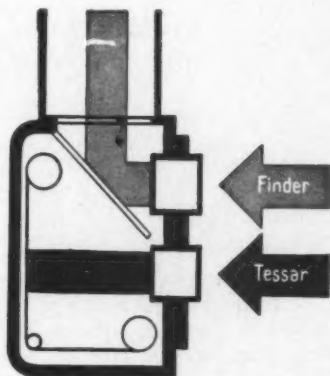


Diagram of Rolleiflex

Are you disturbed that you spent so much time in adjusting the camera? Don't worry. In a few weeks you will be able to open the camera, perform all necessary operations, shoot the picture and snap the camera shut in not more than three seconds after it was opened. All you need is practice.

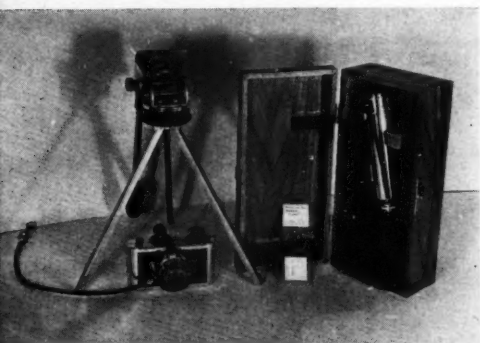
When all the pictures are made and the roll exhausted, rewind the film into the magazine or wind up the protective paper cover and open the camera. The last action depends upon the type of camera. Remove the film and it is ready for development.

This completes the whole cycle. Later we shall take time to unravel some of the mysteries of exposure, filters, lens action, development, enlarging and other processes which are part and parcel of the amateur's activity.

Subvisible World of Color

(Continued from Page 39)

picture, the probable reason is that you have not yet acquired the ability to keep your eyes at rest and to focus the microscope *entirely* by means of the mechanical adjustments. Normally, your eyes try very hard to accommodate themselves to an out-of-focus condition. You must learn to prevent this, for your success depends upon the infinity focus. The camera lens has no such instinctive accommodation. The less your eyes work for you, the better will be the pictures.



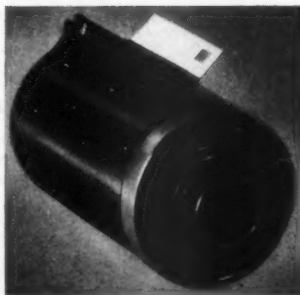
Boltav camera and Bausch & Lomb Little Gem microscope with tripod and tilting top, a complete low cost amateur photomicrographic set-up.

And now you are ready to make the initial exposures. First you will lay out your data card, an essential requirement, for without it you will have to repeat tests before each set of exposures. A blank book with the pages ruled into the following columns will serve nicely: Object—light—light distance—magnification—filter—film—exposure—developer—developer time—paper—paper exposure. Naturally you will number your exposures successively. These data will enable you to duplicate exposures at any later date. Let us consider the various items.

OBJECT. By comparing a new specimen with one used before you can estimate its effect upon the exposure, that is, if it is light, delicate and transparent or heavy and opaque.

LIGHT. Always use the same light. This may be a 6 volt automobile headlight on a battery or transformer, a 32 volt home lighting bulb, an ordinary 110 volt bulb, a projection bulb or a small arc light. Do not use Photo-floods because they vary too much in power. Your exposure can be standardized if you

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New York City

stick to one type of light.

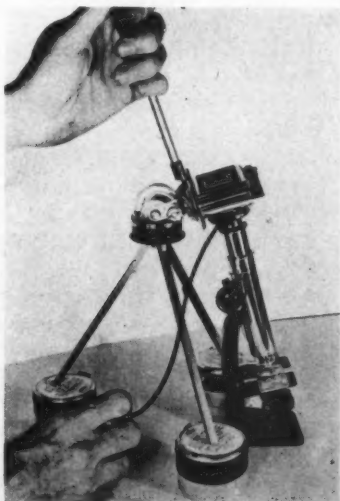
LIGHT DISTANCE. The light should always be at the same distance or the exposures will vary according to the distance.

MAGNIFICATION. The exposure varies with the magnification, as the squares of the magnifications. Start with one or two magnifications and stick to them until you gain some experience.

FILTER. In using color films adjusted to artificial light you will use a light blue photometric filter with ordinary house lighting bulbs. With black and white you will use a green filter such as the tricolor green. This filter will enable you to obtain much sharper pictures as it overcomes the color error of the lenses in the inexpensive microscopes. Do not forget your filters if you expect good results.

FILM. A slow panchromatic such as Panatomic or Finopan is excellent. Micropan is also good. As Panatomic is about the same speed as Kodachrome, it serves as a test film for determining the Kodachrome exposures. Make tests on Panatomic and pick the best in the strip. Then give the Kodachrome the same exposure and you will be delighted with the results.

EXPOSURE. Exposure must be determined by test. When making test exposures the following routine will always determine the exposures for any conditions easily and quickly. Time is in seconds.



Same as above, showing how film cans may be used to raise tripod to necessary height.



THRILLS, FUN in Photomicrography!

PICTURES taken through a Wollensak microscope with your present camera reveal with remarkable clarity some of Nature's most amazing wonders and startling mysteries. Their fine optical quality and achromatic correction yield photomicrographs that sparkle with snap and detail. Model shown magnifies up to 425 diameters (from 100 to 425, graduated in steps of 25) — Costs only \$20.00. Simple to use. 150-power models for \$14.50. Sold at stores, or direct—postpaid (or C.O.D.). Money-back guarantee.

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Foth-Derby Cameras make 16 pictures on standard V. P. film. Picture size $1\frac{1}{4} \times 1\frac{1}{2}$ inches.

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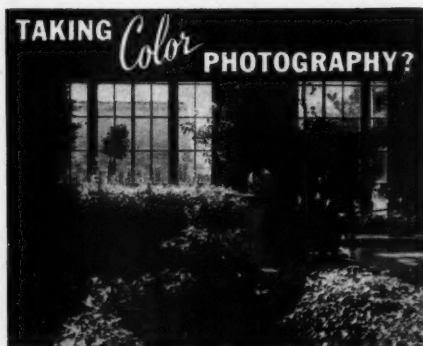
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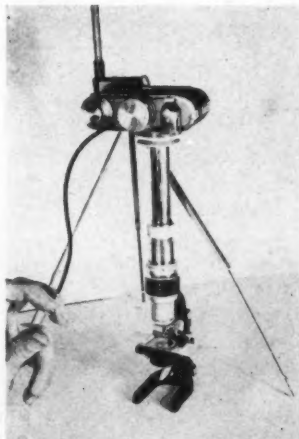
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MICRO EXPOSURE TEST

1. 2. 5. 10. 20. 30. 60. 120. 240. 480.

After making this series of exposures, develop the film and select the best exposure. Examination will show whether the selected negative is too light or too dark. If it is light, make another series running from this exposure halfway to the next higher. If it is dark, make the second test running toward the next lower. Thus if 30 seconds is light, make the new exposures 30, 35, 40, 45. Among those you will find the ideal. If 10 should be dark, make the second series 10, 9, 8, 7 and



Leitz Minor microscope and Robot camera arranged for simple photomicrography.

among them you will find it. Two tests will be enough to give you the absolute time for any exposure.

DEVELOPER. Developers vary. Do not expect identical results when you switch developers. A surface developer requires two to five times the exposure of a quality developer.

DEVELOPER TIME. Increased developer time means increased contrast. For identical results keep the time uniform.

PAPER—PAPER EXPOSURE. For uniformity, keep records of the paper and paper exposure time. This is a good idea for all your negatives, even outdoor snapshots.

Be sure to fill out each space. If you will keep this record faithfully for a hundred exposures, you will be able to set up your micro outfit and make beautiful photomicrographs at any time. You will then begin to appreciate the value of your free ticket to the wonderland of the subvisible world.

And now to take up our pursuit of the color fairyland of the microscope, truly a world of unreality, for while the color is real enough, it is a product of our own manipulation.

Place the sugar slide on the microscope, with one polarizer beneath the slide and another over the eye lens. Look into the instrument and focus carefully. You will see a scintillating display of color in the crystal. Slowly turn either of the polarizers or the object itself. The hues will flash and play in seemingly riotous fashion, but if you will carefully watch *one portion* of the crystal you will notice that the colors appear in rainbow order. Since the various portions all have different colors, the breath-taking display is spectacular in the extreme.

Taking the Picture

WE ARE now ready to begin the actual work of photography. Since a slight change of position of either polarizer will yield a totally different picture, one specimen will provide material for a full roll of Kodachrome. Before making the color exposure, however, you will make the black and white exposure test, as previously set forth, using Panatomic or some similar film.

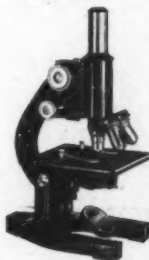
Set up the microscope, focus it as has been explained, and ascertain that the field is evenly illuminated. Provide some support which will hold the camera over the microscope, the lenses of the two instruments together and carefully centered with each other. Be sure the camera is perpendicular to the instrument tube. If the camera has a focusing adjustment, set this at infinity. Make the series of test exposures as described, and from the resulting negatives determine the correct exposure for the color film.

Load the color film, and make the exposures. That's all there is to it.

Photomicrography in black and white, or in color, is not difficult. On the contrary, it is a hobby which can be pursued at less expense than many other branches of photography, and one you can follow for a whole lifetime without having it go stale. There is always something new for you to photograph. If you are a miniature camera fan accustomed to spending hundreds of dollars for lenses and other equipment, why not lay aside a little



Model R
Microscope, \$21



Model H
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uniform results with every flash—high speed synchronized flash shots—brilliant wide area shots—even with the Leica or Contax. What's more, Superflash's patented Blue Safety Spot is absolute assurance that your lamp is safe to use.

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Exercise this specialized technique with the satisfaction of knowing you are roaming through a world unknown to millions.

Two of the color illustrations were made with a different type of color producing equipment. This is a type of lighting used with a microscope and known as Rhineberg Illumination which is similar to the usual Darkfield Illumination. In this case the only light that enters the microscope is that refracted by the object. This produces a silvery-white object against a black background. The Rhineberg System uses a colored stop instead of an opaque one thus coloring the background. The outside light which illuminates the object is given a different color and the object refracting this color apparently takes on this color. So, by using two filters of different colors, it is possible to give the object any desired color against a background of any other desired color.

How Much Contrast?

(Continued from Page 62)

with a photo-electric meter at the camera position, was found to be 320. It is this average brightness condition which exposure tables attempt to estimate. However, when a close-up meter reading was taken eight or ten inches away from the face of the young woman, the actual brightness value was found to be 40. Thus, the actual exposure for a pleasing portrait in this case was eight times as great as that for a general view of the sunlit area. In Fig. 5, exposure was based on the actual brightness value of 40 measured at the face of the subject. Contrast it with the usual result shown in Fig. 4!

Obviously, the effective light on the face will depend on the hat brim, the angle of the head, the color and thickness of the sunshade and other factors differing for every shot, so that no simple rule for "multiplying the normal exposure" can possibly apply. Indeed, Hollywood's movie cameramen and others to whom pleasing details in the features of the subject are all-important use photo-electric meters constantly for shots of this kind.

Two Budgets (Continued from Page 49)

Budget A—\$75.00

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Fixer35
Hypo15
Cotton20
M. Q. Tubes (6).....	.30
Film Clips25

\$75.75

Budget B—\$150.00

Camera and Case.....	\$65.00
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Film	2.25
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Developing Tank	7.50
Trays (3 8x10).....	2.40
Paper Cutter	2.50
Safelight	1.75
Graduate75
Thermometer Stirring Rod.....	1.00
Bromide Paper	3.60
Developer	1.50
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M. Q. Tubes (6).....	.30
Scales	4.00
Film Clips25

\$150.05



\$150.00 Budget. Sufficient is allowed for camera and enlarger to permit purchase of precision equipment.

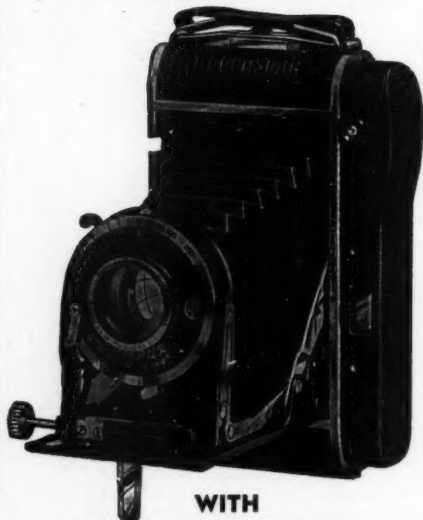
All engravings, including color process plates from transparencies, inside the magazine and on the front and back cover made by Threlkeld Jones, 22 East 12th, Cincinnati, Ohio.



\$150.00 Budget. Features the addition of scales, exposure meter (not shown), prepared developer and other convenient accessories.

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CENTRAL CAMERA

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"Photographic Headquarters Since 1899"

The Candid Cameraman

(Continued from Page 48)

have everything.

So much for getting the picture. Now comes the other horn of the dilemma—making the deadline. This is a problem that, as an amateur, you're not going to worry about often. However, there are always occasions when knowing how to turn out a job in jig-time may be important. This is the procedure:

DEVELOPING, as indicated above, takes a maximum of twelve minutes. Fixation, that is, the hypo bath interval, can be reduced to two minutes thanks to a special newspaper fixer offered by John G. Marshall, Inc., and known as "Two Minute Fixer". Not only will this preparation completely fix out the negative in two minutes flat, but it will leave the film crystal clear thus making it possible to print from the wet negative without more than a casual water rinse.

If you've bemoaned the fact that you could never do your developing and printing all in one session, this will turn the trick. If you can spare ten minutes for washing, after fixing, well and good. If not, another preparation known as Hypo Remover, another Marshall product, works like a charm. The manufacturer does not advise using both products in conjunction with each other, except in an emergency, since they may cause softening of the gelatine, particularly in warm weather. However, when time presses, any short cut is worth knowing.

Now the trick is to get prints from the still wet negative without spoiling it for future use. Easy. The solution lies in what is known as a glycerine sandwich. The wet film is placed between two sheets of optical glass—sometimes it's not so optical—with a few drops of glycerine rubbed on each side of it. The two pieces of glass are then pressed together with the film and glycerine between. Net result, the glycerine sandwich. If the process is carried out correctly the glycerine spreads out and forms a thin, uniform layer of liquid between each side of the film and the glass surfaces. Thus the film is kept moist and protected from damage. Air bubbles which might show on the projected paper are eliminated.

From Tank to Print—One Hour

Developing, fixing and rinsing the finished print take little time. The professional candid man frequently sees his picture in the printed newspaper half to three-quarters of an hour from the time he immersed it in the developer. Of course, this is working under the greatest sort of pressure, but the point is that it can be and has been done.

Mind you, I'm not recommending such rush tactics. But sooner or later there is bound to come the time when your ability to make a rush print may prove to be an unexpected and considerable source of income. As in all else, there is a knack to making these glycerine sandwiches so I advise you to experiment with a couple of indifferent shots before you risk exposing a prized one to the treatment.

In the meanwhile, the world moves on and candid photography is invading every known field of photographic activity. While amateurs have the honor of first seeing its possibilities, the professionals, especially in the newspaper and magazine fields, have been quick to follow. Yet such is the perverse nature of Candid that the best of the unexpected windfalls still fall largely to the amateur. When you sling your minicam over your shoulder and set out on a tour of exploration you never know but that the pictorial beat of the century may be awaiting you just around the corner.

MINICAM wants those pictorial beats and is willing to pay you for them. It also wants your ideas on devices or techniques that make candid work easier or better. Finally, MINICAM invites your correspondence on subjects related to candid photography and your experiences, adventurous or amusing. MINICAM offers up to \$3 each for acceptable outstanding candid pix of the month or ideas for improving candid shooting. Immediate payment and, in the case of pictures, free criticism if they are rejected. Remember, however, with all pictures and letters to enclose a stamped, return envelope. There's no other obligation of any sort.

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\$ WITH YOUR

By John P. Lyons

YOUR minicam is a potential source of supplementary or full time income. Picture magazines, trade publications and many large commercial firms are always in the market for unusual shots, candid camera studies, personality snaps, etc. In this department we bring you monthly a selection of current needs as expressed by leading picture buyers. Study their requirements and send them only what they want. The more closely you observe their specialized limitations, the better will be your chance to make a sale.

Photographs should always be mailed flat with stiffeners in the envelope to protect them. Label your envelope "PHOTOGRAPHS" plainly and they will arrive uninjured. Don't send small prints if you can help it; 8 x 10 is the standard size. Always send glossies. Be sure your name and address are written or stamped on the back of each picture. If you have a minimum price per picture, state it. Always include return postage. When you take portrait or personality studies be sure to obtain a release for publication from your subject.

ACCIDENT SHOTS: Army and Navy Courier, Bedell Bldg., San Antonio, Texas. Want action shots of air accidents . . . Better Freight Pilot, 25 South 6th St., Terre Haute, Ind. \$2 for highway accident shots in which motor freight trucks are involved, pictures which point a "Better Pilot" moral . . . Marine Engineering and Shipping Review, 30 Church St., N. Y. C. Want shots of marine accidents . . . Popular Science Monthly, 353 Fourth Ave., N. Y. C. \$3 up for views of unusual or freak accidents . . . Railway Employees Journal, 901 Montrose Ave., Chicago, Ill. \$3 to \$5 for photos of accidents, but not railroad accidents . . . Safety Engineering, 75 Fulton St., N. Y. C. \$3 for dramatic photos of prevention safeguards and accidents pointing to the angle of prevention, including fire protection, health conservation.

AIRCRAFT DIRECTORY, Athens, Ohio. Want "unusual photos of anything pertaining to aviation. Close-ups, infra-red, anything striking or artistic. No ordinary views." \$1 to \$3.

MINICAM

American Agriculturist, P. O. Box 367, Ithaca, N. Y. \$1 to \$3 for good pictures "which tell a farm story or would interest farm folks."

American Bicyclist, 461 Eighth Ave., N. Y. C. \$1 to \$2 for views of "any cycling event, parades, races, parking fields, touring, unusual dealer's window displays, merchandising events."

American Collector, 432 Fourth Ave., N. Y. C. \$3 for photos of "specimens of antiques only."

American Fur Breeder, Manhattan Bldg., Duluth, Minn. \$3 for "scenics with fur-bearing animals in the view."

American Hebrew and Jewish Tribune, 48 West 48th St., N. Y. C. "Candid shots of the hobbies, pastimes, families of Jews prominent in the industrial, scientific, art, letters, theatre world." \$1 up.

American Home, 444 Madison Ave., N. Y. C. Want "single photos and page spreads of exceptional home interiors and gardens."

American Lawn Tennis, 500 Fifth Ave., N. Y. C. \$1 to \$3 for "tennis action shots, group pictures and scenes, candid shots of tennis celebrities and devotees."

American Legion Magazine, 15 West 48th St., N. Y. C. A wide open market for good action scenes of American Legion activities, coming up to a high standard in subject, human interest and degree of photographic, technical excellence.

Bandwagon, Ramsey Tower, Oklahoma City, Okla. \$2 for "unusual action photos or art material picturing Oklahomans and Texans abroad, especially in distant places."

Cavalry Journal, 1624 H St., N. W., Washington, D. C. \$3 for "good military, primarily cavalry subjects."

Central Feature News Service, Times Bldg., N. Y. C. "Informal snapshots, candid action, full page layouts, feature series showing a progressive development of the subject." \$5 up.

Circulation Managers Supplement, 814 Lemcke Bldg., Indianapolis, Ind. Want good pictorials of "people reading newspapers in the home, or receiving newspapers from carrier boy at front door."

Civic Health, c/o The Mathews Co., 1221 Beaufait Ave., Detroit, Mich. Exploit good health \$2.50 to \$5.

through milk. \$3 to \$5 for "good baby and other illustrations of the use of milk, a dairy pasture or herd scene of pictorial excellence."

College Humor, 22 West 48th St., N. Y. C. \$5 up for "collegiate news photos, candid camera shots, preferably in sequence of six to eight, picturing unusual or humorous college campus happenings."

Coronet Magazine, 919 N. Michigan Ave., Chicago, Ill. Offers a pamphlet outlining their needs.

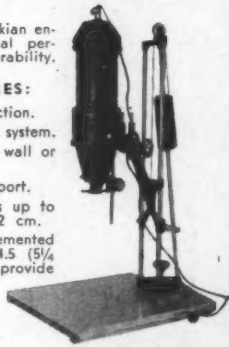
Crane Co., Room 507, 221 N. La Salle St., Chicago, Ill. \$2 to \$10 for "before" and "after" photos of home modernization and improvement, especially those embracing plumbing and heating improvements with Crane fixtures. Address W. L. Benson.

Dance, 49 West 45th St., N. Y. C. \$2 up for "portraits, good candid shots, action views of well-known dancers, informal and candid shots of noted dance personalities, etc."

Daring Detective, 1501 Broadway, N. Y. C. \$3 for "single photos of beauty contest winners and

The LABORANT A Precision Enlarger

This modern Czechoslovakian enlarger emphasizes optical perfection, stability and durability.



SPECIAL FEATURES:

- All aluminum construction.
- Double condenser lens system.
- Swivel tripod permits wall or floor projection.
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- Will take negatives up to 3 1/4 x 4 1/4" or 9 x 12 cm.
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Pacific Coast prices 10% higher

\$132⁵⁰

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for speed work.

Recommended for use with 1/2 the normal exposure. Enlargements from 15 to 25 diameters.

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for super-fine grain at low cost.

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Czechoslovakia

The Friendly
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is all that its name
implies. Automatic
in its action, re-
sponsive to the
slightest manipula-
tion, it coordinates

more fully with its user than any camera
known. It will, indeed, prove a COM-
PANION worthy of all the reliance you
place on it.

It has features that are individual to this
camera alone. Double exposure is al-
together impossible—the optical system
includes a pair of really matched lenses
of consecutive serial number; and a
folding magnifier provides ultra-sharp
focus of a portion of your actual film
size, very luminous image.

The matched lenses which focus
simultaneously by inter-connected
gear train are both Hugo Meyer
Trioplan 75mm. f/2.9 objectives.

"The COMPANION" makes either 11 or 12
exposures 6 x 6 cm. on regular 120 film.

\$69⁵⁰

Literature on Request

Abe Cohen's Exchange, Inc.

"The House of Photographic Values"

120 FULTON STREET

NEW YORK

similar girl shots; news personalities, particularly
good-looking women."

Diesel Power, 192 Lexington Ave., N. Y. C. \$4
for examples of unusual uses of Diesel engines in
delivering power in industry.

Electrical Housekeeping, 545 Fifth Ave., N. Y. C.
W. E. MacKee, Editorial Dept. \$5 to \$20 for good
8 x 10 photos of "electrical housekeeping interest."

Elliot Service Co., 242 West 55th St., N. Y. C.
\$2 up for "industrial shots, scenes of plants, work-
ers, production methods, coal mining, scientific
subjects, oddities, etc."

(The) "Farm Paper Department" of King Fea-
ture Syndicate, 235 E. 45th St., N. Y. C. \$5 to
\$10 for "original photos of farm, rural and agri-
cultural scenes suitable for magazine covers." Also
"farm oddity" photos which might apply to cows,
chickens, farming in general, preferably something
like Ripley's "Believe It Or Not" pictures.

Field Artillery Journal, 1624 H St., N. W., Wash-
ington, D. C. Want shots of "field artillery pieces
and men, here and abroad." \$2 each.

Frontiers, "A Magazine of Natural History", c/o
Academy of Natural Sciences, Philadelphia, Pa.
\$2.50 to \$5 for cover pictures of "wild animals in
natural habitat, trees, flowers, insects, snakes and
particularly good shots of North American mam-
mals."

Front Page Detective, 149 Madison Ave., N. Y.
C. \$2.50 for photos with short caption, dealing
with oddities of crime.

Gasoline Retailer, 480 Lexington Ave., N. Y. C.
\$5 for views of outstanding, unusual or architec-
turally different filling stations.

Grit, Williamsport, Pa. \$2 to \$2.50 for photos
of oddities, out-of-the-ordinary things, freaks of
the animal and vegetable kingdom.

Golfing, 14 E. Jackson Blvd., Chicago, Ill. \$1
to \$3 for "clear sequence photos of prominent
golfers from beginning to end of golf stroke."

Harper's Bazaar, 572 Madison Ave., N. Y. C.
The staff takes fashion photos, but the editor fre-
quently buys good candid news photos of well-
dressed women and children at sporting events.
\$5 up.

Horse and Jockey, 2337 Devon Ave., Chicago,
Ill. \$1 to \$3 for "interesting views of horses and
jockeys and particularly action shots around the
stables of race tracks." Good candid would go here.

Horseman and Fair World, 1013 Majestic Bldg.,
Indianapolis, Ind. \$1 for "harness racing scenes
of important events."

Hygeia, 535 N. Dearborn St., Chicago, Ill. A
health magazine of the Amer. Med. Assoc. \$1.50
to \$5 for human interest views of medical prac-
tices and practitioners of other lands.

Infantry Journal, 1115 17th St., N. W., Wash-
ington, D. C. \$5 for "professional shots of military
subjects, preferably infantry."

Keystone View Co., 219 East 44th St., N. Y. C.
Want "American industries, attractive scensics,
photos of children, animals, new inventions and
human interest features."

Landscape Architecture, 9 Park St., Boston,
Mass. \$2 for photos "showing landscape design,
either naturalistic or obviously man-made." Also
any news photos showing landscape design.

Lands of Romance, 217 N. Harvey St., Okla-
homa City, Okla. \$1 to \$2.50 for "scenes and peo-
ple for ethnological appeal, costumes, etc. Devoted

to Mexico, Central and South America, West Indies."

Mack-International Motor Truck Corp., 48th Ave. and 34th St., Long Island City, N. Y. E. M. Post, Jr., Advertising Dept., wants views of "Mack trucks, busses and fire apparatus if there is a news tie-up."

Metropolitan Weekly, 220 West 42nd St., N. Y. C. \$5 for pictures used in "sets that tell a story in progressive sequence form. Anything dramatic, human interest, humorous or service interest, pertaining to the American scene."

Modern Medicine, 84 South 10th St., Minneapolis, Minn. \$3 for photos of "news of medical interest, new inventions made by doctors and used in medical practice."

Modern Packaging, 425 Fourth Ave., N. Y. C. \$2 to \$5 for "photos of displays which feature packages, views of packaging in nationally known manufactories, photos stressing the advertising value of modern packages."

Musical America, 113 West 57th St., N. Y. C. Not more than \$5 for "candid snapshots of musical personages, musical events, groups and news."

Musical Courier, 119 West 57th St., N. Y. C. \$2 for "original and interesting photos of musical celebrities."

National Bowlers' Journal and Recreation Age, 506 South Wabash Ave., Chicago, Ill. Good shots of bowling and billiards, especially human interest candid.

National Motorist, 216-218 Pine St., San Francisco, Calif. \$5 for good "views of interesting California scenes that can be reached by motor."

National Sportsman, 2515 Pearl St., Austin, Texas. Particularly like action shots of leaping fish and moving game or unusual pictures of hunting, fishing and camping.

Nude Magazine, Oakland, N. J. \$5 for "not posed nudes, but bona fide natural nudists in outdoor locale, one, two or three figures. News photos of sun and air bathing, nude bathing, abbreviated bathing costumes, etc."

Oral Hygiene, 708 Church St., Evanston, Ill. \$3 for "candid shots of dentists engaged in newsworthy and unusual pursuits; of action pictures in the dental office; of human rather than technical interest."

Pix Publishing, Inc. \$3 to \$5 for "candid shots of personalities, as well as good action shots. Semi-news photos of people in the news."

Platform News, 45-A Free St., Portland, Maine. \$3 to \$5 for candid or straight shots of "speakers, radio and stage stars, dramatic scenes, debate teams, anything pertaining to stage, radio, debating."

Princeton Alumni Weekly, c/o Princeton U. Press, Princeton, N. J. \$3 up for "candid shots of Princeton alumni in the news."

Product Engineering, 330 West 42nd St., N. Y. C. \$3 to \$5 for "fine photos, with short descriptions, relating to the design, engineering and final development of metal products."

Progressive Salesman, 22 East 12th St., Cincinnati, Ohio. \$2 for good shots having some connection with house-to-house salesmanship, showing a neat salesman in action.

Review of Reviews, 233 Fourth Ave., N. Y. C. Ask for "candid camera shots of prominent persons, celebrities in the news, and national news interest."



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Wollensak's Enlarging Velostigmat—famous for transferring to your enlargement every finest detail in your negative, with glorious fidelity. Fast—f3.5 and f4.5 in 2", 3" and 3½" focus; f6.3 in 2" and 3½". Know this splendid lens. Write for literature, moderate prices and free trial offer now.

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PILOT 6

THE UNFAILING GUIDE TO BETTER PHOTOGRAPHY
The beginner in miniature photography will assuredly appreciate the unique advantages of the Pilot. He will, without doubt, achieve better results with this compact and inexpensive little camera than with costly instruments of elaborate construction. He will see his image in clear, sharp detail on an actual film size focusing ground-glass finder. The Pilot is indeed a superb little camera possessing numerous refinements which include a high hood that prevents side-light and glare from penetrating the focusing screen; an auxiliary magnifier for fine focusing, 5 shutter speeds ranging from 1/20th to 1/150th second as well as time and bulb.
Pilot makes 16 pictures 1½" x 2¼" on standard 120 roll film.

Dimensions: 3 x 3½ x 4 inches
With f/6.3 lens \$16.50 f/4.5 lens \$23.50 f/3.5 lens \$30.00

Literature on Request—FREE TRIAL GLADLY GRANTED

BURLEIGH BROOKS Incorporated
127 West 42 Street New York

Round The Home Magazine, c/o Georgia Power Co., Atlanta, Ga. J. M. Stafford, Jr., Editor. Seeks to educate rural and small town families on "electrical living." \$5 to \$10 for good pictorials suitable for covers, of "electrical appliances with action shots and human interest."

(The) Rudder, 9 Murray St., N. Y. C. \$3 for scenic yacht and sea scenes.

"Say It With Flowers Magazine", 1221 Beaufait Ave., Detroit, Mich. \$3 to \$5 for good photos of professional standard, fine flower arrangements, attractive table decorations with flowers, wearing flowers, etc.

Screenland, 45 West 45th St., N. Y. C. \$5 for "news photos, rare photos, candid, on movie subjects and characters."

Southern Flight, Ledger Bldg., Fort Worth, Texas. \$3 to \$5 for "photos of South and Southwestern aviators, human interest, airports, manufacturing, scoops of new designs, general aviation activity in the South and Southwest."

Southern Sportsman, 2515 Pearl St., Austin, Texas. Shots of Southern fishing and hunting, must be unusual and action. A string of fish or a deer on a rack won't do.

Stage, 50 East 42nd St., N. Y. C. \$5 to \$50 for "exceptional, professional photos of the theatre, films, music and radio."

Tool Engineer, 2842 West Grand Blvd., Detroit, Mich. \$2 for exclusive photos of "views of tool engineering, unusual tooling, tool set-up, mass production activities, etc."

Trailer Topics Magazine, 28 East Jackson Blvd., Chicago, Ill. \$3 to \$8 for "good glossy prints of trailer subjects, trailer construction, special trailer equipment, etc."

True, 1501 Broadway, N. Y. C. A true detective magazine. \$3 for "action shots, timely subjects, crime celebrities, oddities of personalities, action crime news photos."

Underwood & Underwood News Photos, 420 Lexington Ave., N. Y. C. Pay 35% of the amount of sales realized for "news events of national importance, feature photos, striking industrial and scenic photos, good travel pictures, shots of new inventions or of scientific nature."

West Coast Lumbermen's Assoc., 364 Stuart Bldg., Seattle, Wash. Exploit the use of Douglas Fir, Sitka Spruce, Port Orford Cedar, West Coast Hemlock and Western Red Cedar. \$2 to \$3 for photos of good homes constructed with these woods, especially small homes; beautiful home interiors, wood bridges, wood towers, unusual wood buildings.

Wooden Barrel, 411 Olive St., St. Louis, Mo. \$2 to \$5 for "good timber shots, or exceptional photos of stacked staves, bolts or billets, uses of barrels in various industries."

Yachting News, 1082 Penobscot Bldg., Detroit, Mich. \$5 for "unusual yachting pictures and activities, Great Lakes area."

Young Dancer, 49 West 45th St., N. Y. C. \$2 up for photos of young dancers, between 6 and 18 years, presenting the glamor of the dance world.

Fourth Dimensional Photograph

(Continued from Page 43)

First attempts may not be fully satisfactory, because you must develop your technique, but if you will stick faithfully to sequence

shooting for a period of one month you will admit that no other method is as satisfactory.

There must arise the question of equipment. For sequence shots an ordinary camera may be used in those cases where the intervals are great enough to permit resetting the instrument. For interchangeable use the Leica, equipped with a rapid winder, permits shots as fast as the actions of pulling the trigger (to wind) and pressing the button (to release) can be performed. The average worker should be able to shoot at least two a second in this manner.

Then we have the camera designed and built for this particular kind of photography, the Robot, which clicks off twenty-four shots as rapidly as you can press the release, truly with the machine gun rapidity claimed by its makers. The zone focusing and short focus lens makes it perfectly practical to pre-set the focus so that with pre-set focus and stop, all you need do is to sight and shoot. Practice will develop the ability to make exposures at analysis rapidity so that the actual motion of the subject is analyzed. Five, even six to the second may be shot.

Fourth dimension in pictures is not a catch phrase created to introduce a new type of camera; it is not the "faddistic" indication of a new stunt. Rather, it is recognition of a fundamental which has existed as long as pictorial representation, but which has heretofore been largely ignored. Aside from cameras, apart from photography, a pictorial record of an incident *must* be incomplete if the Time dimension is lacking.

Build It Yourself!

(Continued from Page 24)

shown in Fig. 4. Any enlarger can be used. The extension on which the enlarger is set can be bolted in several positions with respect to the back-board to give a wide enlarging range. The back-board is painted dull black and has spring fingers to hold the paper. A cabinet as described here can often be picked up cheaply at a second hand furniture dealer. If you are handy with tools it will be no problem to adapt the cabinet as indicated in the illustrations. Otherwise, any carpenter will adapt it to your own specifications for a few dollars.

Bass Bargainingram

VOL. 27 No. 1

179 WEST MADISON STREET, CHICAGO, ILL.

SEPTEMBER, 1937

BASS SAYS:

Here, at the Camera Cross Roads of the World, we chuckle when folks suggest that Minicams are new cameras. Why, man alive, we have been selling small format cameras for the last 30 years. Granted, lens apertures and refinements were not what they are now, but nevertheless, some of the boys did mighty fine work. Bass wishes this new magazine for the "miniaturist" a well deserved success.

Charles Bass
President

BALDA BALDAXETTE

Uses regular No. 120 or B-2 Roll-film. With Meyer Trioplan F:2.9 lens. With coupled range finder, automatic film transport, helical lens mount. Self erecting.



Model 1—Sixteen 1 1/2 x 2 1/2 pictures with Compur shutter, list \$90.00. Bass price \$62.50

MIDGET MARVEL



35 mm. Candid—precision built, one piece body . . . focusses to 3 ft. Vario shutter—F:4.5 Anastigmat \$19.50

With F:3.5 Anastigmat in Compur shutter—1/300 sec. \$32.85
Eveready Case, \$4.75

Unusual Rebuilt or Nearly New Bargains:

Makina Deluxe with Anticomar F:2.9 lens, 8 1/4" Telephoto F:6.8, wide angle Anastigmat F:6.8. Full equipment as listed for \$400.00; like new .. \$275.00

Like new Contax III fitted with Sonnar F:2 lens, Eveready case. List \$298.00; price \$227.50

5x7 Stereo Graflex, matched Tessar IIB F:6.3 lenses and equipment \$125.00

FILMARUS ENLARGER

—for negatives 24x36 mm., or 3x4 cm., fine glass negative carrier, fitted with 55 mm. Anastigmat F:6.3 lens, focusing filter condenser, well made and mounted on board, at only \$27.50

11 x 14 Paper Holder with adjustable margin. \$4.95



SPECIAL FILMAREX MODEL 0

—for negatives 24x36 mm. 3x4 cm. 4 1/2 x 6 cm. and 6x6 cm. with masks, condenser, ruby focus filter, precision construction, with 9 cm. Anastigmat F:4.5. Iris diaphragm \$50
With 55 cm. Anastigmat F:4.5. Iris diaphragm \$45
Without lens, but threaded for Leica lenses \$35

ENLARGING LENSES

50 mm. Delynx Anastigmat F:3.5 in Vario shutter. Special \$8.50
50 mm. Velostigmat F:3.5 in Iris barrel \$12.50
3 1/2" inch Velostigmat Anastigmat F:6.3 in Iris barrel \$9.75
3" Velostigmat F:3.5, Iris bbl., \$16.50
3 1/2" Velostigmat F:4.5, Iris bbl., \$13.50
5" Velostigmat F:4.5, Iris bbl., \$24.50

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BASS DURAPOD—12 section—weighs but 9-oz. Made of Duraluminum; truly a gem. Closes to 6 inches, yet opens to 45 inches. Complete with zipper case. Only \$11.00
Hi-sturdex tubular telescopic tripod. Five sections—59 inches high. Closed, 15 1/2 inches \$5.25
Hi-sturdex tripod Jr. Four sections. Opens, 47 inches; closed, 15 inches. Rubber tipped \$2.55

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16 EXP V. P. (3x4 cm.) with Zecanar F:4.5 lens, Vario shutter.

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With F:2.9 Pronto Shutter—to 1/175 second.

Delayed-action,

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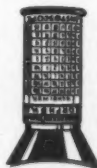
With F:2.9 Zecanar lens in Compur Rapid shutter—to 1/300 sec. \$35.00

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Ever-ready—instant—one hand operation—shows time from 30 minutes to 1/1000 sec. From F:2 to F:22. Clear, non-corrosive, permanent scales. An excellent meter. Sole Leather Case 50c



permanent scales. An excellent meter. Sole Leather Case 50c

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Precision made—12 6x6 cm. on 120 film. Skopar F:3.5 lens. Compur shutter, automatic film transport. A true \$100 value only

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Eveready carrying case \$7.50



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FINE GRAIN—No. 15

Prepared Form

24 oz. \$1.50 1/2 gal. \$3.00
32 oz. \$1.90 1 gal. \$5.00

Compact Form

No. 1, \$1.00 No. 2, \$2.00

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Save this first issue of MINICAM! It may become valuable some day as a collector's item . . . when Fourth Dimensional photography is a reality and black and white prints are quaint. But to you, right now, the next twelve issues of MINICAM offer solid, practical value. You can be sure of getting your copy promptly, on the day it is published, by sending in your subscription, today. A subscription for this lively and informative new magazine means twelve months of added appreciation of your own minicam and what you can do with it. MINICAM — The Miniature Camera Monthly, \$2.50 by the year.

MINICAM

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Gentlemen:

Enter my one year subscription to MINICAM beginning with the October issue. Enclosed is \$2.50 as payment in full.

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MINICAM wants to be your magazine. Tell us on the next line, or write us a letter about the sort of articles you would like to find in coming issues.

It's All In The Point Of View

(Continued from Page 28)

in mind not photography itself, but some of those who practice it. It is true that not all who use cameras are artists. But is it not also true that not all are artists who use brush and pencil or sculptor's chisel?

What I am leading up to is that, tempting as it is to prescribe certain "musts" for the bird's-eye view, it would be unwise, for example, to say that the scene must have interesting shadows or that it must have people walking through it or that good pictures cannot be taken when the sun is high. A hundred beautiful examples can easily be thrust into my face to prove I am wrong.

If it looks like a picture to you, it's a picture and worth your film, despite every photographic rule and regulation ever propounded.

Selecting the Unusual Viewpoint

ONE of the most interesting uses of the down or bird's-eye angle is in photographing groups of people absorbed in a common attraction, such as a soap box orator, a street hawker or street workers. Parades, large groups of dancers or skaters and similar subjects in which the formation and design of the subject provides an attractive pictorial arrangement, are also best photographed in this way.

The oblique viewpoint is in many instances imperative. A staircase, a street corner, a house—these subjects would, in the main, be imperfectly represented unless shot obliquely. In this way you achieve the perspective that gives some idea—how accurately or how poorly depends, of course, on your own skill—of what your subject looks like. By showing two sides instead of the one that a head-on view, for instance, would give, your picture affords as nearly complete a report of the subject as can reasonably be expected of a single photograph.

The close-up is the busybody view. What is he doing; how is he doing it? Let us take a look at the delicacy and texture of that flower. Come nearer and see the beauty of this design. What marvelous power lies in those hands! The details of life are full of wonder and charm. You should record

MODERN MASTERS OF PHOTOGRAPHY

Edited by HEYWORK CAMPBELL

The Galleon Press takes pleasure in announcing with this first issue of MINICAM news of another "first" . . . *Modern Masters of Photography* . . . a series destined to set a new standard for the appreciation of art in photography.

Ready Sept. 1st and to appear quarterly thereafter, each issue will contain forty reproductions in giant format of masterpieces by the world's greatest living camera artists.

No compromise with quality has been made in the reproduction of the individual subjects. In the first volume alone four distinct types of printing . . . gravure, acquatone, letterpress, four color process . . . have been employed. In addition, toned inks and three types of paper make a total of thirteen variables in a single book.

Each picture is printed on paper 11 x 14 inches, captions and descriptive data on the reverse sides. Earlier works, projected on a far less ambitious scale have invariably sold for ten dollars or more a set. *Modern Masters of Photography* is offered at \$3.00 per volume, in a choice of two editions — boxed in portfolio, or handsomely bound in modern Plastic.



FOR SUBSCRIBERS: If you will place with your dealer or bookseller a subscription for *Modern Masters of Photography* he will tell you how you can receive, without additional charge, a framable print by Lejaren A. Hiller, reproduced 22x28 inches, in gravure. Your dealer will give you full details of this unusual offer. Or you may obtain a descriptive folder by addressing the publishers.

Series I. Pictorialists Ready Sept. 1st
Boxed in Portfolio or Bound in Plastic \$3.00

THE GALLEON PRESS INC.

381 FOURTH AVENUE

NEW YORK

them camera-wise every chance you get. A beautiful architectural detail is lost in a picture of the entire facade; a tiny whirlpool loses its appeal in a shot of the entire lake; a pretty child's face is often more pleasing in a "head-and-shoulder" telephoto shot than a "full-length" portrait.

On the other hand, the "long" view taken at a distance from the subject, is not without its attractions. For the landscape and the seascape or wherever you wish to give an impression of vastness and space, of all-inclusiveness, this is the viewpoint. Here you are not interested in identifying details, but in interpreting the whole.

In considering the proper viewpoint for a particular subject we have to determine what it is we are after. So far we have been discussing pictorial representation for "straight" photography, that is, how to obtain pictures that are beautiful, agreeable, faithful to the original subject. There is another type of photography, variously referred to as "effect", "stunt" or caricature photography. We want to startle or astonish or be just plain funny. For example, we get close up to one end of the subject and show it greatly exaggerated in size and proportion to the other end of the subject which is also included in the picture but at a considerable distance from the lens. That is all right too, if you want it.

But make up your mind. Distortion is useful in caricature and you proceed wilfully to achieve it when working to this end. But in a "straight" close-up, for instance, distortion is ruinous. This is one of the chief hazards that the photographer who experiments with a variety of viewpoints must watch out for. There is nothing wrong about exaggerated perspective, but in its proper place.

You cannot intelligently choose your viewpoint without knowing such fundamentals as the fact that a diagonal line is the line of alertness, the line of action and vigor; that the horizontal line is one of calm and repose, and the vertical symbolizes rigidity, immobility. You must know, too, that lines should not, ordinarily, all run in the same direction, but, for the sake of balance, some of them should follow an opposite course; that curves relieve the monotony of straight

lines, and that contrast, whether of lines, curves or tones of the masses, is the key to the successful photograph.

Above all, experiment. Approach old subjects from new viewpoints. Avoid the humdrum. Think and feel and tilt without shame. Study good photographs in magazines and books and salons. Take them apart; see what makes them tick. More often than you might suspect, you will probably find that their chief power and effectiveness is all in the point of view.

Subtractive Lighting

(Continued from Page 19)

is round, this is square. The second is interpretation. This chair is friendly, this desk a crouching beast. It is useless to say that a chair has no character or that a desk cannot crouch. If one *looks* friendly and the other as though it were preparing to spring, then that is how the mind interprets them.

From the above experiment some conclusions can be drawn. First, shadows lend an object solidity, emphasize its form, cause esthetic satisfaction. If to see is not only to recognize but also to individualize, then we literally see by shadow. In the group of illustrations comprising Figs. 1-3, note how abstract forms gather emphasis as their shadow pattern becomes increasingly evident.

Our second conclusion is that objects may be given interpretative meaning by the play and modulation of shadow. Although we cannot see without light, neither can we see, in any full sense of the term, by light alone. Not until we begin to subtract light does an object take on first, emphasis, then meaning.

The Nature of Shadows

LET us examine more closely into the nature of shadows and determine whether they are subject to any orderly method of classification. It is immediately apparent that we can divide them into three large groups, namely, those shadows inherent to the object, those cast by the principal object being photographed and those cast upon it by some external bulk. For convenience we term these three types, respectively, Primary, Secondary and Tertiary Shadows.

Few objects present a single plane to illumination. The great majority of things, a face,

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a table, a chair, have surfaces on various planes, that is to say, nearer and farther from the light source. These planes display shadows, depending on their varying depth and position. It follows therefore that under casual illumination the Primary Shadow will be that inherent to the surface of an object and produced by the subtraction of light. It is this shadow that the human eye instinctively observes to determine roundness and depth. We noted earlier that when all shadows were deliberately eliminated, objects appeared two-dimensional, robbed of depth. The shadow under the eyes, the shadow on the cheek—these are examples of the Primary Shadow which we also term the Modeling Shadow.

Unless the source of light is directly overhead all objects cast a shadow of varying length to one side or another. These cast shadows are termed Secondary Shadows. Esthetically, prime interest is in the object itself. The shadow is incidental, and therefore passive. The object being photographed occupying, as it does, the center of interest, is active. The first of this classified type is the Indicative Shadow, determined by the angle of illumination and the approximate shape of the object itself. In the Indicative Shadow, planes and surfaces will seldom be discernible, nor will it be possible to determine other than general outlines. Within broad limits, however, the Indicative Shadow does reveal the form of a body.

Another type of Secondary or cast shadow is the Cross Shadow. The result of conflicting illumination, the Cross Shadow tends to confuse form and to create a sensation of bewilderment. On rare occasions it can be used to advantage to produce an effect of deliberate distortion or exaggeration.

Tertiary Shadows are that group which reverse the normal focus of interest in a picture. This time the shadow itself is active with the object being photographed relegated to a minor or passive role. First under this group is the Projected Shadow. As its name implies, this is a shadow cast on a surface or object and which reveals the shape of the object upon which it falls. The classic example is the shadow of a straight bar falling

in any direction across a round body. The distortion of the straight shadow as it follows the contour of the body will reveal that contour even more definitely than does the Modeling Shadow. This type of shadow has many and varied uses as will be presently demonstrated.

The Rhythmic Shadow, next in the Tertiary group, can best be identified by the recent rash of latticework pictures. Presumably used to heighten a mood or enhance design, the Rhythmic Shadow is that cast by any object, seen or unseen, and which takes the form of a repeated pattern. Despite its current disrepute, this shadow, properly handled, can impart to a picture a delicate sense of motion and immeasurably enrich design.

The final type of shadow in the Tertiary group we term the Psychological. Rarely encountered and for the most part improperly comprehended, the Psychological Shadow may be termed the visual presentation of an abstraction. Of no specified form, its function varies with each individual beholder. By setting up a train of thought without more than barely indicating form, the Psychological Shadow enables each person who observes the picture to complete the image in terms of his own experience.

To summarize, shadows may be classified as follows:

1. Primary Shadows—those through which the human eye instinctively observes roundness and depth.
 - a. Modeling Shadows—those inherent to an object.
2. Secondary Shadows—those cast by an object to one side or another.
 - a. Indicative Shadows—those cast by an object to one side or another and which reveal approximate shape and bulk.
 - b. Cross Shadows—conflicting shadows caused by multiple illumination.
3. Tertiary Shadows—those active shadows which form the primary interest in a picture.
 - a. Projected Shadows—any shadow cast on a surface or object and which reveals the shape of the object upon which it falls.
 - b. Rhythmic Shadows—those cast by an object, seen or unseen, and whose purpose is to enhance design.
 - c. Psychological Shadows—those whose nature suggest an idea by setting up a train of thought in the beholder's mind.

(To be continued—October issue)

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